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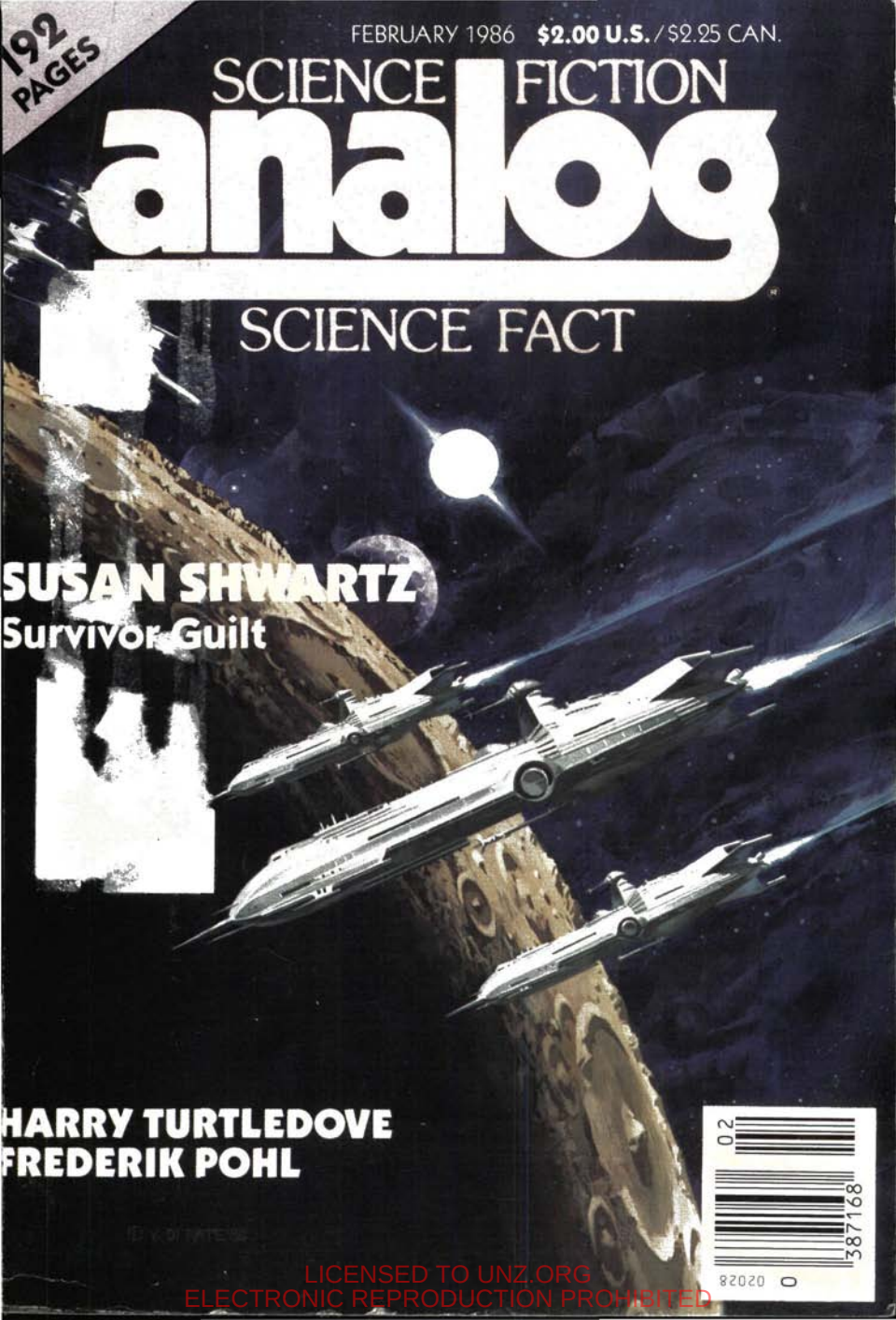

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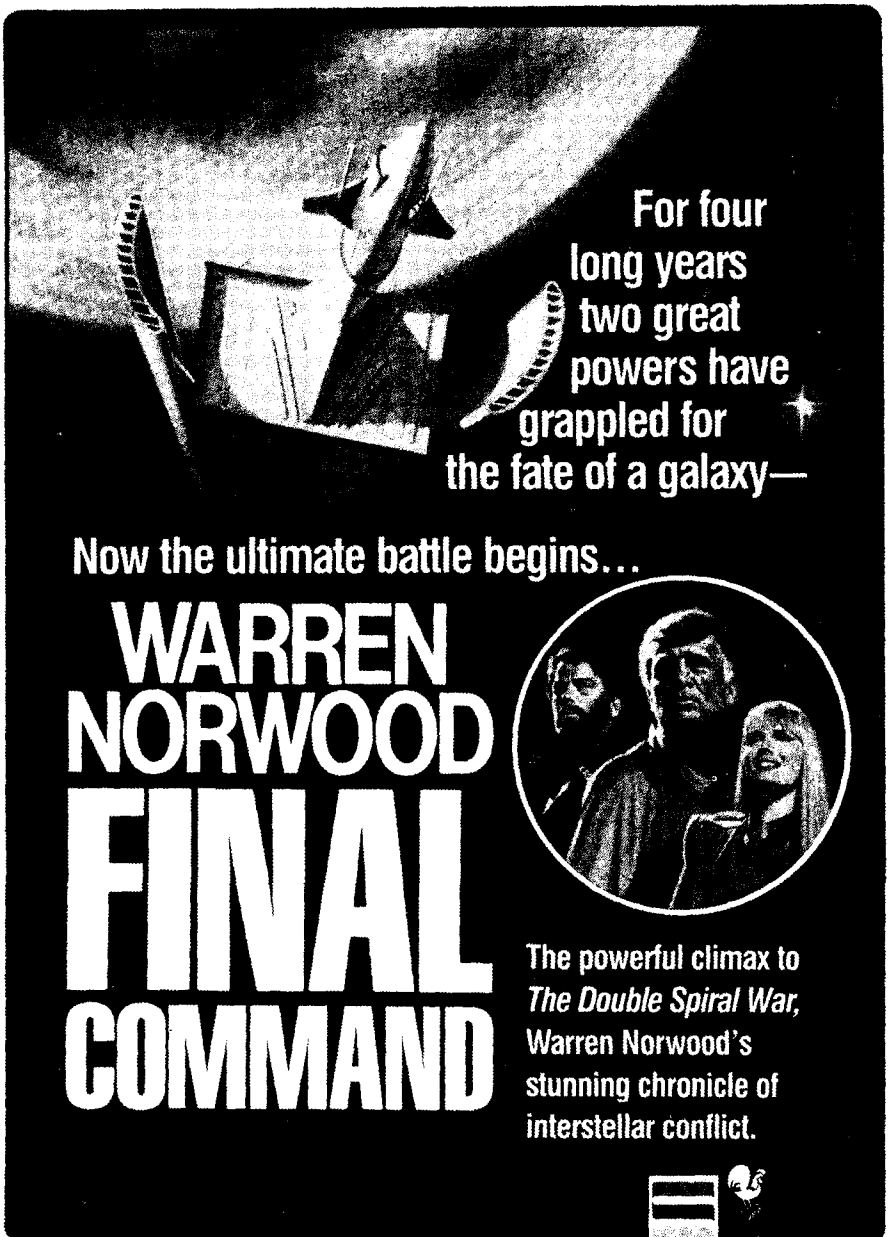
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Editorial

FINITE CORNUCOPIAS

Sheila Smith

Stanley Schmidt

Let's get one thing clearly understood right from the start: I'm all for man's expansion into space, for all kinds of reasons. In the long run, if our species wants to have any realistic hope of being more than a flash in the astronomical pan, it *has* to expand. It simply cannot afford to confine its entire membership to one vulnerable little planet. In the short run, while the vast majority of us will still live here, the rest of the Solar System offers resources which can greatly enrich all our lives. We can, if we really want to and we're clever enough, virtually eliminate poverty as we know it on Earth.

Yet I must balk at some of the specific terminology I've heard some space advocates use in promoting this idea to the public. When I hear lunar and asteroid resources described as "virtually unlimited" or "virtually inexhaustible," I begin to get uncomfortable. When a writer goes even further, as some do, and drops even the "virtually," I positively cringe.

"Earth's resources are limited, but those of the Solar System are infinite."

Now where have I heard that before?

Well . . . American history, for instance. When they found out it was here, Europeans swarmed exuberantly onto this continent, dazzled by the seemingly endless material wealth they saw here for the taking. Nobody thought about conservation; there was so obviously so much here that it would have seemed stupid to worry about how much anybody used. Or how much anybody polluted, for that matter; a reservoir so

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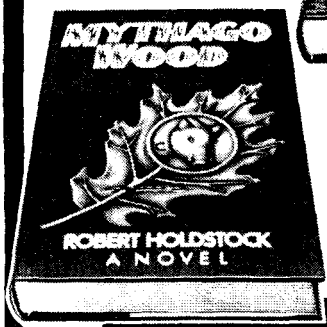

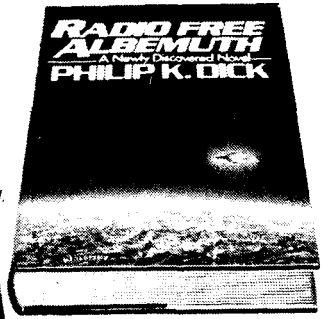

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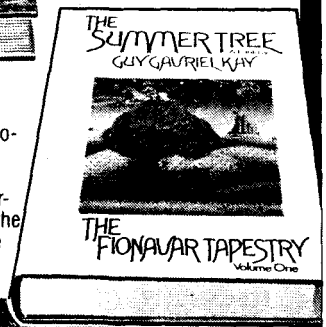

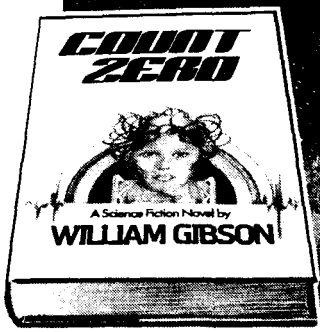

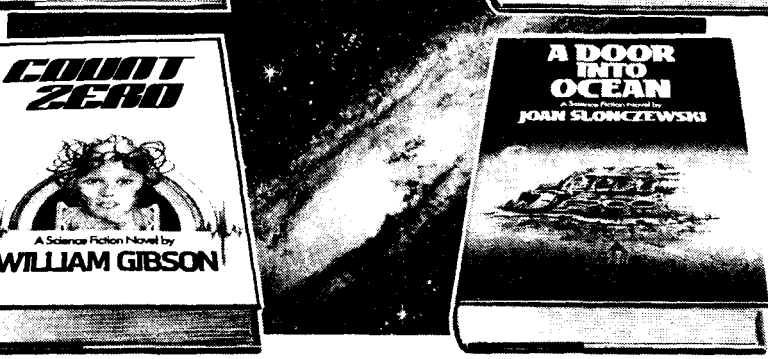

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vast could obviously absorb an *awful* lot of trash without feeling any ill effects. As recently as thirty or so years ago, when I was in grade school, geography books and teachers were still telling us wide-eyed innocents how fortunate we were to live in a country that was blessed with all the natural resources it could ever need in such areas as energy.

We know better now, of course. But how did we learn so much so fast?

Very simply: we began to see the bottoms of some of our barrels. There's a superstition in some academic circles that the concept of "infinity" is too subtle and difficult for laymen to grasp, but that's nonsense. The concept of infinity is deeply ingrained in the average layman's mind at a very real, painfully practical level. Infinity is the amount of electricity in the wall socket, the amount of oil in Texas. . . .

Until it isn't any more. Until the end is in sight.

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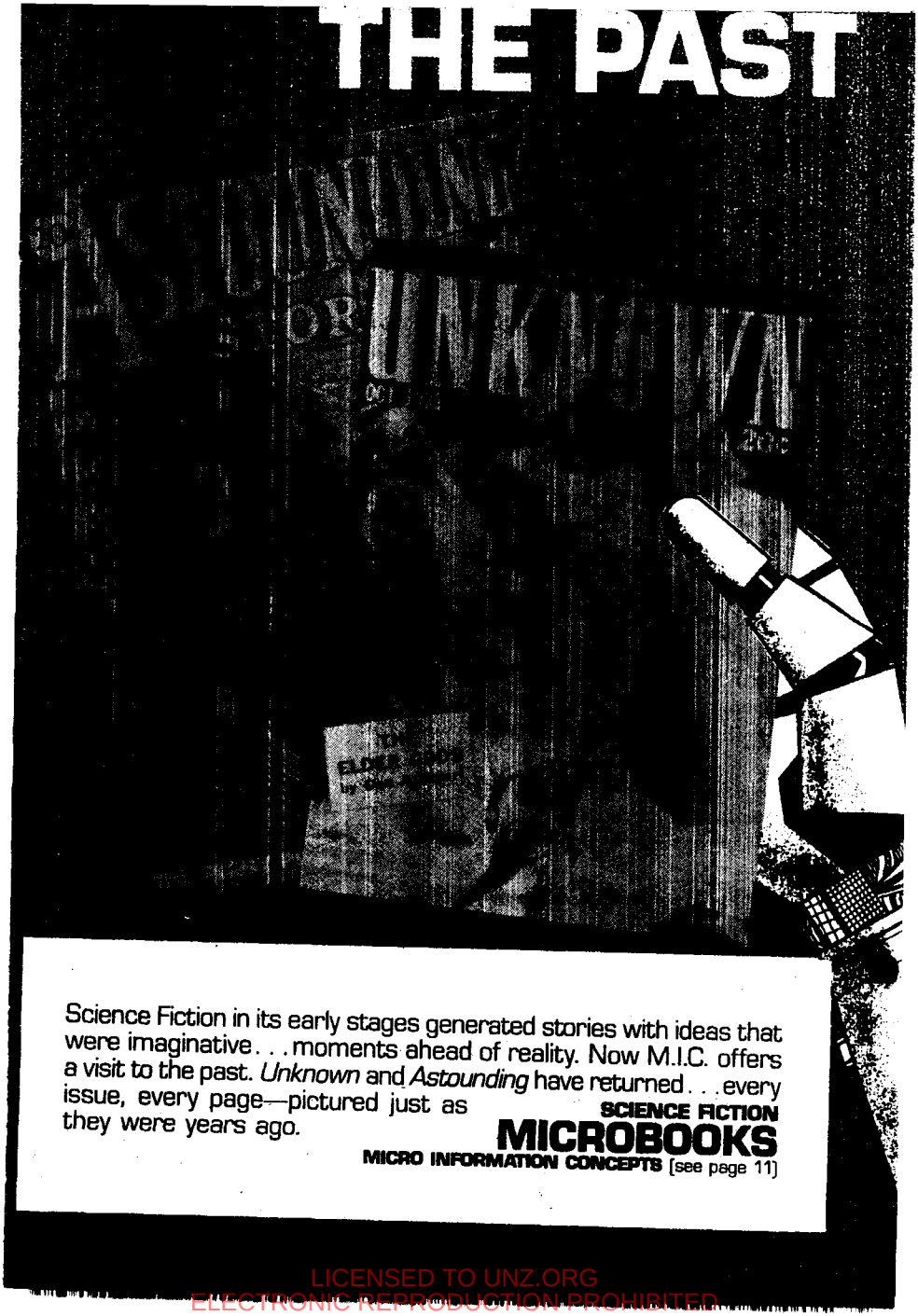

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SCIENCE FICTION
MICROBOOKS
MICRO INFORMATION CONCEPTS [see page 11]

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What most people haven't learned is the difference between "infinite" and "very large." "Infinite" means that no matter how many objects you take from the set, you can always still take another one. There's *no* end. "Very large but finite," on the other hand, means you can take a lot, but if you keep doing it long enough, eventually you reach a point where there are no more.

The common human tendency is to regard "infinite" and "very large" as synonymous, but they are far from it. The difference may be subtle, but it's profound and *exceedingly* important. Until you can *see* the bottom of the barrel, it's easy to forget that there is one. But it's there all along, and when it finally comes into view it's easy to wish you had started planning for it a long time ago.

But, of course, by then it's too late.

So what happened between the wide-eyed optimism of the Fifties and the oil embargos and other scares of the Seventies and Eighties? To give all due credit, I doubt that the brighter writers and teachers of the Fifties *really* believed the supplies of anything were unlimited. They just thought they were so large that there was no need for anybody alive then or in the foreseeable future to worry about running out. What they didn't realize was that that very attitude tends to increase the *rate* of depletion—and when you combine that fact with the roughly exponential growth of both populations and technologies, it happens all the faster.

So here we are—gazing uneasily at the remnants of the resources we were so recently told were inexhaustible and wondering what happened. And listening to new voices telling us, "But there's a *really* inexhaustible supply Out There. . . ."

It sounds as seductive as it always has, but the resources of the rest of the Solar System are not a whit more infinite than those of the Earth. They're just a lot bigger. Unless we get a lot more people understanding the difference, they're doomed to repeat the ever-popular mistakes. The only question is how long it will take. Probably longer than it took here, admittedly—but not nearly as much longer as you might think. Populations and technologies still tend to grow more or less exponentially, and if the available resources look infinite, people will find ways to use them at rates which were once inconceivable.

Furthermore, the more remote the supplies are from the consumer, the more likely he is to regard them as inexhaustible. He's not going to believe the barrel has a bottom until he can personally see and feel it—and if he's in Dubuque and his supplier is somewhere between Mars and Jupiter, that's not going to be easy.

As I write this, metropolitan New York is living out an impressively pertinent cautionary tale. (I hate to keep picking on New York; the last time I used it as an example of a large collection of people living quite isolated from their basic support systems, I was sternly chastised by a couple of indignant New York readers. So I'll apologize in advance—but I must do it again. New

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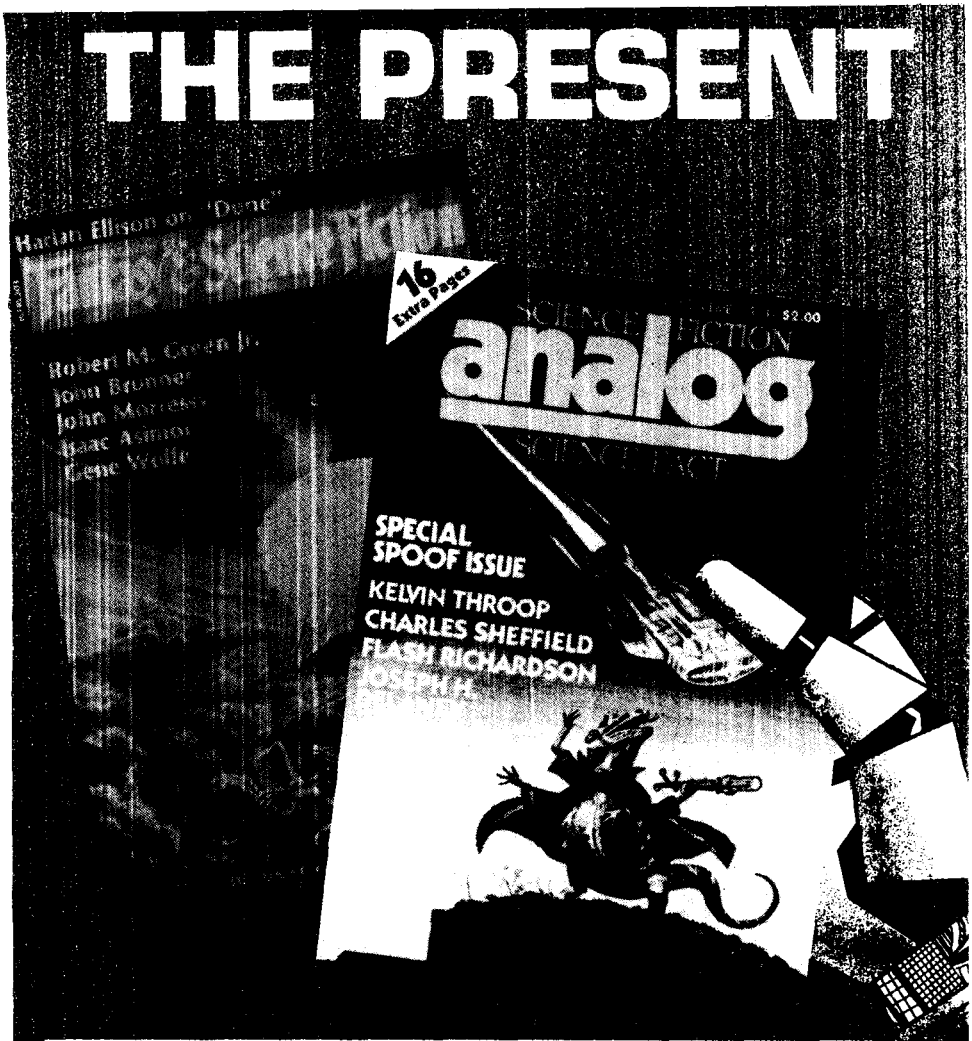
THE PRESENT



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MICRO INFORMATION CONCEPTS [see page 11]

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York remains the best such example I'm personally familiar with—and, as you'll soon see, the situation is even worse than I formerly realized.)

The problem this time is a drought—but it's a very peculiar drought. You can tell it's there because the newspapers are full of it: the latest statistics on how low the reservoirs are; the latest restrictions on water use imposed by New York City and its northern neighbor, Westchester County (which shares its water supply); occasional stories about someone being arrested for sneaking out at night to water his lawn or wash his car; dire predictions about what will happen if the drought gets any worse. Yet if you don't read the papers or watch the news, you'd be hard put to find any sign of it. For the most part, even unwatered lawns and trees and shrubs are green and lush, and the summer has actually brought slightly *more* than normal rainfall.

What's going on here? What's going on is that the New York metropolitan area feels other people's droughts, not its own. Most of its reservoirs are some hundred miles away, in and near the Catskill Mountains. (An interesting choice, I note in passing, since a ranger I met while backpacking there once told me the Catskills are characteristically one of the driest ranges in the East). *That's* where the rainfall determines the status of New York City's water supply; most of the rain that's been falling *in* the city and in Westchester simply runs off into the ocean. How do you get people to act as if there's a drought when everything they see around them, from plenty of rain to healthy vegetation, says there isn't?

With hindsight, a good way might have been to put the reservoirs closer to home, so that an effective drought would *look* like a drought, with parched grass and all the traditional trimmings. But that isn't always practical; sometimes the best source *is* some distance away, and a population as big as this one may simply need more than nearby watersheds can provide. In southwestern cities like Phoenix, which is actually an artificial oasis, water *must* be imported from neighboring mountains—but people in places like that tend to be pretty water-conscious as a matter of course, since they never have to go far from their doorsteps to see full-strength desert, and they must *pay* for whatever water they use.

New Yorkers don't. I was recently astonished to hear that New York is the only large city in the country where water is not metered, but simply provided as an unlimited basic service out of general revenues. So not only do New Yorkers get their water from invisible sources, they are given no financial incentive to monitor or limit their use of it. As a result, chronically unfixed leaky faucets and other forms of waste are rampant. Why not? Why should a landlord pay to fix his plumbing when he doesn't have to pay to waste water? From a New York apartment, nobody can *see* that the distant reservoirs are finite; and when the city provides water in a way disguised as free and unlimited, it strongly encourages its citizens to believe that it really *is* free and unlimited.

(continued on page 92)

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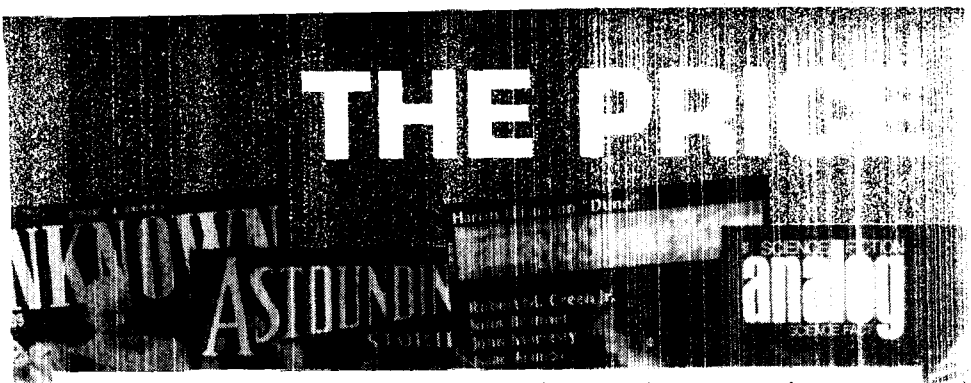

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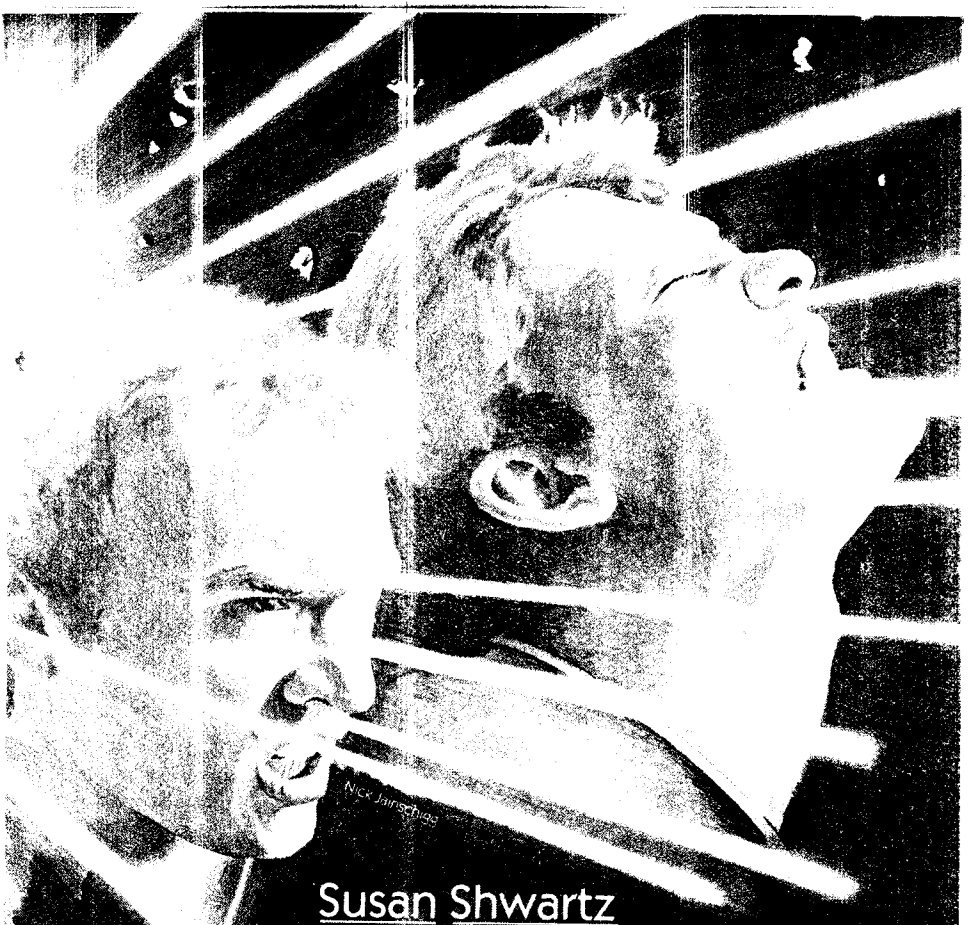

Susan Shwartz

SURVIVOR GUILT

Memories of past experiences
can profoundly shape
people's attitudes toward the present—
especially when confronted with
something like a distorting mirror.

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Beyond the fields, half the adults of Cynthia colony and all the children, refugees of the years-long war between Alliance and Secessionist forces, of the slagged worlds, ran and played. From here, Pauli Yeager didn't think they sounded any different from children who'd never waked screaming, not from nightmares but from memories. *"Consequently I rejoice,"* she thought wryly, *"having to construct something upon which to rejoice."*

There were grounds for rejoicing. So far, no Secessionist ships had ventured this far into the No Man's Worlds to discover their outpost. Wide-spectrum immunities protected them from any disease their new home might have in store, and there'd been no predators they couldn't defend themselves against. Laboriously, she bent down to examine a fretwork of humming rods that generated a faint violet light which enclosed the fields down to the river.

"You can touch them," she'd been briefed. "A human's electrostatic field won't trigger the charge. It isn't strong enough. But . . ."

The stobors' fields would. As always, Pauli winced at the name. But she supposed it had probably been inevitable. She rubbed the small of her back. She was a small woman, weathered after several seasons downworld, and except for the pregnancy that slowed her walk and made bending down a penance, rather thin. Before her reluctant assignment here, she had been a pilot. Now her pregnancy had doubly grounded her.

These days her back ached constantly. So did her feet, despite chief medic Alicia Pryor's constant attempts to keep her off them. But she had to inspect the fields destined to replace their hydro tanks. Pauli was relieved they'd figured out how to turn the stobors' native protection against them without having to try to wipe out the species. The stobor were bad enough. Her husband Rafe called them one part lemming, one part platypus, and the rest God-knows-what. To make matters worse, they came equipped with electrostatic fields. Touching one stobor earned you a nasty shock. Bumbling into two or three could paralyze you. Contact with more would probably stop your heart; and of course the damned things traveled in packs, herbivores drawn irresistibly to the crops vital to the settlement's survival.

Brushing ocher grainstalks aside, several of the refugee children accompanied Rafe into the fields. Tall and lanky, he had a lazy smile and easy manners that won over the civilians whom Pauli still tended to regard as a foreign species. *Rafe's half a civ himself*, Pauli thought, but she tempered the words with a smile. When she'd been a pilot (with a life expectancy you could measure in months) she'd kept him at a distance. But now, if Pauli had a reason to live, it was Rafe's faith in her.

'Cilla, one of the youngest children, and devoted to Pauli—God only knew why—limped over and took her hand. "How's the baby?" she asked. Pauli laid 'Cilla's hand on her stomach to feel the tiny, emphatic kicks.

Suddenly the hard little hand jerked. "Shooting star!" 'Cilla cried.

A streak of cold fire blazed down the night sky and struck the horizon without a sound.

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"You have to make a wish," she said.

Pauli gestured at two former crewmembers. *Take all the children inside*, her lips moved soundlessly.

I'll make a wish, all right, Pauli thought. I hope it *is* just a meteorite.

"Impact coordinates recorded." Another crewmember handed her his macrobinoculars. But the haze from the shields, the domes' yellow nightlights, even the beamers some people carried, blocked her vision.

"Recon team?" Rafe asked.

Quickly, Pauli ran over the list of people she called her reliables. There was no way that medic Pryor would let Pauli, her pregnancy this far advanced, lead a team, much as she'd have liked to. Pryor was both too old and too valuable to be risked. Rafe? No way round it: he'd have to lead, and she wanted bearish, quick-minded David Ben Yehuda along to back him.

"You'll have to lead, Rafe," she said. "Take care."

Quickly, they passed the word for the team to assemble.

"Even if we didn't maintain silence, the hills would block communications. I'll need a messenger," Rafe said.

Pauli shut her eyes. Of the few settlers who could use the fliers (little more than old-fashioned gliders), the most skillful was Lohr, age twelve. He was quick, smart, but Pauli wondered if given the chance at a Secess' pilot, she could trust him.

"Look who's coming," Rafe pointed. "So help me, he must *smell* trouble."

Lohr skidded to a stop beside them. "If you're sending out a team, you'll need a messenger. I'm the best with the fliers."

Pauli looked him over. "And if I said that Rafe and David were just going to check on stobor—"

"Lieutenant, not even the littlests believe stobor come down from the hills. Your team's checking on that meteorite. *If* it's a meteorite—"

"One more word out of you, Lohr, and you're confined to base," Pauli said. "And if I find you've been babbling to the littlests . . . no, I guess you wouldn't. Get your gear, and tell Ari ben Yehuda he's going along to keep an eye on you."

Rafe laid an arm across Pauli's shoulders. She wrapped hers about his waist as they joined the rest of the team. Briefing was quick, farewells quicker yet. "You come back," Pauli whispered fiercely, her face buried against Rafe's shoulder. "You just come back!"

No one knew better than an Alliance pilot just how deadly the Secess' were. Compared to them, native predators were child's play.

By dawn, they were well up into the hills. Rafe swore and reached for his macrobinoculars. Beside him, Lohr crouched, his pupils contracting to pinpoints. His lips skinned back and he all but growled.

"See anything up there?"

"A few sparks," Rafe grunted. "Could be anything."

Lohr dug through his pack and pulled out struts of metal and a gleaming length of mesh into which the struts slipped until long, flexible wings took shape.

"You won't get any help from thermals this close to dawn," Rafe warned

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Lohr. "It's a good thing you're light. But we have to make sure the base knows there might still be Secessionist ships around. You won't be afraid?"

"Can I have a blaster?" Cunning aged Lohr's face so he looked far older than twelve.

"Lohr, you know what Pauli told you about weapons," Rafe said. "First, you're better off flying light. Second, if you've only got a knife, you'll probably have the sense to run from a fight you can't win. No matter how much you want revenge."

Rafe held his breath as Lohr sized him up. Finally, he shrugged, resigning himself—but only for the moment—to facts like Rafe's superior height and weight.

He strapped the wings to his back. "One thing more." Though Rafe kept his voice down, it seemed to boom against the overhanging rocks. "Tell Pauli I recommend evacuation."

The settlers universally hated the caves into which they'd practiced evacuating most of the colony—all but the ones like Pauli, who couldn't climb now, or the people whom age or injury had disabled . . . plus those few able-bodied who had to stay behind as decoys.

Rafe flashed "thumbs up" at the boy, and heard a shaky laugh. Lohr stepped off the rock, dropped for a hideous moment, and then soared. The last of the moonlight gleamed on his wings.

"Damn, I hate sending out a kid while I'm stuck here," he groused at Ben Yehuda and his son. "Now we just sit here till he gets back. Dave, am I right that scanners could pick us up if we move?"

"Should be enough rock between us and that object to protect us. But they might have picked us up on a flyby."

"What if it's just an escape pod?" Rafe asked. Pods were fitted with automatic distress signals and programmed to land as softly as possible. In that case, they'd face a live enemy.

David tinkered with the comms. "I'm not picking up anything . . . yet."

"You know Lohr's going to want to check out that landing, don't you? What are you going to do then?" asked Ben Yehuda's son.

"First, I'm going to hope it's a meteorite," Rafe said. "But if it's not, *you're* going to sit on Lohr so he doesn't get himself killed."

What if it is a downed pilot and not *one of ours?* Rafe thought. Pauli had passed on pilot rumors: that the Secess' five-ship formations flew so fast and so close that the pilots were hard-wired into their ships, and that the whole damnable cyborg was configured to a mammoth computer run by some sort of sadist.

On my own home station, they blew the power core. At least my folks died fast . . . I hope. Rafe shuddered as he always did when he thought of fading life support, of the air growing foul and thin and cold before the lights went dead. He felt the cold sweat of panic trickle down his spine at the thought of meeting the sort of man who'd done it.

"You've got our coordinates for the landing site?" Pauli asked Lohr again. The winds teased up a gust of cinnamon from the fields, their earthtones startling against the greenish groundcover and the violet haze of the electric shields.

She glanced enviously at Lohr's wings.

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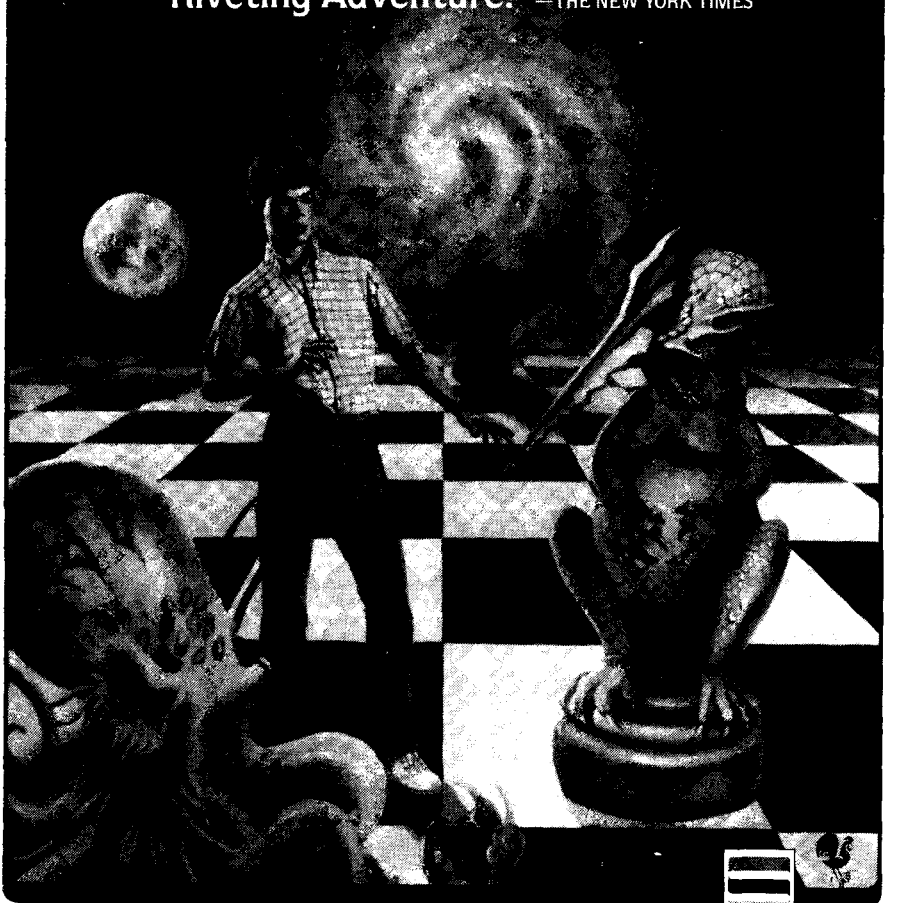
It started as a game. It ended in a nightmare.

William Sleator

INTERSTELLAR PIG

"Riveting Adventure!" —THE NEW YORK TIMES



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There were deep circles beneath the boy's eyes. Perhaps, after all, someone else should report back to the recon team.

Alicia Pryor strode up. "The first group to evacuate will leave for the caves in about ten minutes and be followed by five-person teams every half-hour."

"What about you?" Pauli asked. She wanted their most experienced medic to join the people hiding in the caves.

"What about *you*?" Pryor retorted. "Lohr, get moving before Yeager tries to pull rank on you and I have to declare her medically unfit."

"Head up," Pauli whispered as Lohr headed for the cliffs, passing the first group of fugitives.

"The rest of you, back to camp. Make the place look lived in," she ordered. "On the double!"

That defense now seemed very fragile. "I ought to be there—" she told Pryor.

"Forget it! If I thought you wouldn't miscarry, I'd get you up into those caves so fast—"

"They can manage without me." Pauli spoke without bitterness. "Someone else would lead."

"Like Rafe? Or me? No, thank you very much. Look, I wish you'd get it through your head that while you've got opponents here, you don't have enemies. Think it through, Pauli. These are civilians! They're not used to someone making orders stick."

Pauli whirled to face the other woman.

"Even after—"

"Even after what we've been through here. Now that the place looks safe, they sit down and want to argue. Except for the littlest ones."

"I don't think they'll ever trust again, do you?"

"They trust *you*. Which is one reason why I'm staying down here. To look after you."

"What's the real reason?"

To Pauli's astonishment, Pryor's pale skin flushed, and the older woman looked off into the distance.

"I'm sick of talk too. And besides, by staying here, I free a spot for someone younger. How old do you think I am, Pauli?"

The smaller woman shrugged. "Forty-five, maybe?" If she shielded her eyes, she could see Lohr poised high overhead, waiting for just the right thermal . . . there! Sunlight danced onto unfurled metallic wings, as Lohr banked in salute before veering up into the hills.

"Add twenty years," Alicia Pryor chuckled dryly. "Balliol II had plenty of anti-agathics for senior faculty at Santayana."

"You're trying to distract me, right? Otherwise, if you haven't spilled your guts before this, why'd you do it now?"

"Precisely," the medic said crisply. "As I said, I got sick of talk, talk, talk. Probably because I listened too hard to one person. Pauli, did you ever hear of Halgerd of Freki?"

Pauli allowed Dr. Pryor to steer her back to her quarters (so bare without Rafe's gear) and ease her down onto a mat.

"Halgerd of Freki? Sure." At one time or another, most educated people for six systems around had heard of Halgerd of Freki, laureate in genetics, who'd curtailed a brilliant research ca-

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reer when the war broke out, resigned his professorship on the safe haven of Balliol II, to return to his homeworld. His *Secessionist* homeworld.

"I wonder what sort of uses they've put a brain like his to," Pauli mused.

"It's likelier that he's using them." Pryor's voice was muffled as she bent to activate the self-heat tabs on two food packs. "Halgerd's no martyr. He left Balliol for Freki only after his research group broke up." She paused. "Freki's one of the throwback worlds. Did you know it even used to be a military oligarchy?"

"Group Two headed out, Pauli."

"Get Three ready to move."

"Right."

"Was your Professor Halgerd one of the oligarchs?" Pauli raised eyebrows as if gauging Alicia Pryor's sympathy for her old colleague. A geneticist with military interests. Gods.

"Something like that. He never got over it. And we, we helped him. He left before we could dump his computer. At least, I wanted to. Some of his work on cloning—I thought it ought to be suppressed."

"I thought Santayana never suppressed research."

"That's right. But it doesn't mean I didn't want to. Another reason I resigned. I'd lost my objectivity. So now the Secessionists have all his experiments. And him along with them. Part of that work is mine, Pauli. That means part of the blame's mine too."

"If it's absolution you want, I frankly don't envy the people hiding out in the caves."

"That isn't it. For once, I don't want to be exempt because of my age, or my profession, or status or some damned liability." Pryor's lips narrowed. "God, I sound like Halgerd did before he left. It got to be you couldn't be in the same room with him without hearing a lecture on the evils of non-interference."

There were a few worlds like Freki, mostly settled by one racial or ethnic group—Freki and Tokugawa on the Secess' side, and on their own, Abendstern and Ararat. Usually drawn from one ethnic stock, driven by a dream of former glory to reanimate old languages and older ways, settlers of the throwbacks were generally too tough to be dismissed as eccentrics. Freki prized aristocrats and warriors—and Halgerd had been both. He'd been Pryor's colleague . . . what else? The medic was pale, patrician-looking; years ago, she must have been stunning.

Pauli patted the medic's shoulder. "As the chaplain used to tell us, I haven't heard a word you've said."

A shadow across the noon sky drew Rafe's attention and he froze against the rock.

Lohr dropped down onto a bight around fifteen meters above them, his wings furling about his feet before he slipped off the flying harness. He scrambled down the slope, showering the recon team with pebbles and dust, and finished his descent in a skid that might have skinned the hide off him if Rafe hadn't caught him. Lohr was all legs, ribs, and eyes, Rafe thought. His skin was clammy, and his breathing too rapid.

Ben Yehuda began to rifle Lohr's pack. "These coords should save us about six, seven hours," he grinned.

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"You don't have to stop for me!" Lohr pushed against Rafe's chest, trying to stand on his own. "I can travel."

"Really? Just you try it." Expertly, Rafe tripped the boy and eased him down onto a pad Ari Ben Yehuda unrolled.

Lohr submitted to be fed, and ate ravenously. The instant he finished, he began to protest again. Rafe let him struggle to his feet. He managed about four steps before he collapsed.

"You go on ahead," he muttered. "I'll sleep, then catch up. I'll fly there . . . you can trust me not to do . . . 'nythin' stupid—"

Beneath the blanket, the boy's thin body twitched with exhaustion.

"We'll give him two, three hours of rest," Rafe decided.

No one spoke of meteorites any more.

"Over this way," Ben Yehuda gestured, never raising his eyes from a small tracker. Pebbles scraped and slipped beneath his feet until finally, inevitably, he tripped.

"Man, are you trying to break your neck?" Rafe hissed as he slid down beside him. "Or announce 'company coming?' " His neck heated with ridiculous anger, and he jerked David back onto his feet.

"Down!" Ari whispered.

Up ahead, in charred and gouged-out scree, lay the emergency pod.

"Good thing there wasn't much brush about, or we'd have had a fire too—"

"I'd rather have a nice, friendly brushfire," Rafe said.

One of the pod's landing struts had buckled. The pod lay canted over, dented and scarred where it had scraped the hillside.

"A pod that small's got to be from a fighter craft."

"Is its beacon working?" Rafe asked.

Ben Yehuda made fractional adjustments to his instruments.

"It didn't land stable," he muttered, "but those things are built to last. See, that dish . . . some beacons have external components . . . and I'm afraid that one's function—"

Light raved from Rafe's blaster and ozone abraded their eyes and throats. "Not now it isn't," he said.

"Talk about announcing that we're here," Ben Yehuda observed.

"The hatch . . . it's heard us," Lohr whispered, his voice cracking.

The hatch grated aside, then stopped halfway.

"That spar's blocking it," Rafe said. "Looks like we can pick our moment to let him out." But they might as well get it over with. He sighed and vaporized the spar.

He had a macabre fantasy of prying out whatever occupant was in there . . . in whatever shape he was in. Or she. He preferred to think of the Secessionist as male. An enemy. A war criminal. Maybe they should just seal it up and let him die.

"Now what?" asked Lohr.

"Might be safer if we waited, let him wear himself down—"

The grating intensified, was replaced first by pounding, then a long, long silence.

I don't want to have to go in there after him; that's certain to be a trick. Why'd I get stuck with leading this team?

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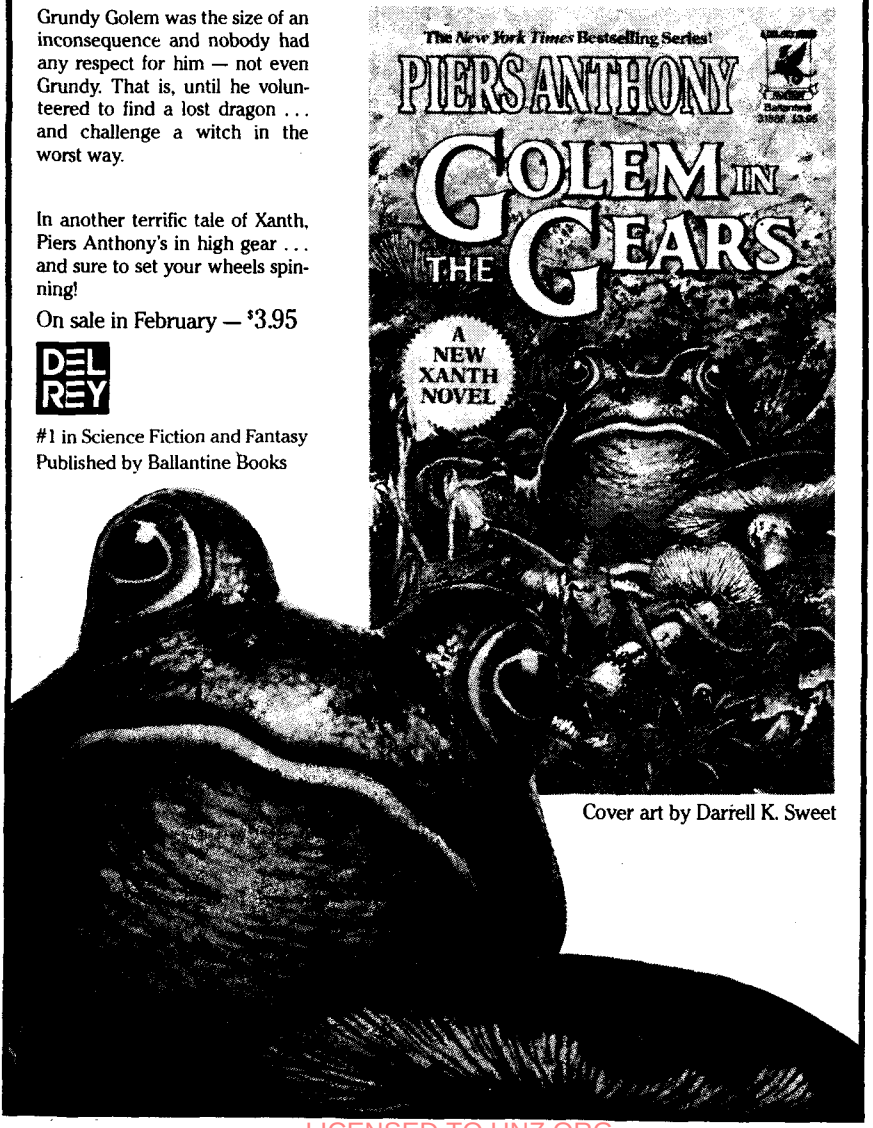

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"Ki-YAI!"

The roar made them all shout. Blaster fire lanced out wildly as the metal hatch buckled.

One bolt caught a dead tree leaning at an angle above the craft that had toppled it. Now it showered sparks and blazing twigs onto the man who half-jumped, half-tumbled from the pod. He started to fall, the practiced, graceful roll of someone long-drilled in combat techniques, and brought up short with a gasp.

Blood-colored light and caked blood stained pale hair and paler skin. He was tall, Rafe thought, probably even taller than he. And muscles in proportion. Damn. He raised his blaster.

"Get him!" Lohr shouted.

The boy's shout brought the man's head up.

One hand against the rock he'd fallen against, the Secess' pilot levered himself up. His eyes were wild and they didn't track. Concussion, maybe. He glanced out into the night, squinting against violent light.

"Now, while he's off-balance," Rafe hissed. "Move in. Lohr, you and Ari stay back."

Rafe stepped out into the circle of fierce light, prepared for anything but the look of incredulous, almost agonized joy on the pilot's face.

"Braethra!" he shouted, or something that sounded like it, and started forward exuberantly, arms outstretched. Then he stumbled, went to his knees.

Rafe forced himself into the firelight. God, but the man was fast. He raised his blaster, bringing it into his line of sight.

"Braethra?" the word was an accented whisper, pained, disappointed. Abruptly he gasped, hands going to his head. "Wyn, Fee, Hal, Ash, Kane—"

As Ben Yehuda came up behind him he tried to whirl, to face them. He screamed once in loss and rejection before he collapsed again, his face in the dust. They had binders on him in an instant and were rolling him over.

"Let's get some light on the subject," Rafe ordered. The face, even with the blood, the bruises, and a terrible emptiness, that face was familiar. Add years to it, thin the hair a little, and he'd seen it in texts, recorded lectures.

"Halgerd of Freki," he muttered. "Maybe forty years age difference . . . this man could be his twin brother—"

"He's not breathing." Lohr's voice was shaky. Rafe scanned and shook the man, then tilted back his head.

"Ari, help me with CPR." He gestured with his chin at Lohr. Like the rest of them, Lohr probably knew how to restart a man's heart. But *this* one . . . they needed information too badly to trust this man to Lohr's shaky sense of justice. Rafe started breathing for the downed pilot, pausing, then breathing again. Ari's hands worked on the man's chest, and his face was taut with concentration.

Rafe nodded at David Ben Yehuda, who started toward the pod. "I've got some time before you need me. Lohr, help me clear this debris away. I want to get in there, see if there's any information—" Or a functioning transmitter, Rafe thought, but Dave didn't say so.

As their enemy's chest began to rise and fall shallowly, Rafe sat back on his heels, breathing hard.

"Ought to do it," he muttered, and

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threw a blanket over him. They'd have to get him back. . . .

"Get him!" As the man went into violent convulsions, Rafe launched himself forward. The Secess' back arched and his heels drummed on the rocky ground, then, alarmingly, he went limp. Rafe was ready with an injection.

"Damn," he said, "I wish Pryor—" then his lips thinned as the pilot started struggling again. One hand tore free of the binders and cracked against a rock. Though the man cried out in pain, he scraped his wrist against the rock, and blood spurted from the severed artery.

Binding him while keeping him from bleeding to death was a messy five minutes' work. Afterwards, Rafe sat back on his heels, hoping for a chance to rest. Why had the man deliberately slashed his wrist?

"Not again, dammit!" Rafe grunted, and dived forward, tearing open the man's flightsuit and slapping an injection patch over his heart. Adrenaline again. The pilot jolted and gasped, eyes and lips snapping open briefly.

"What's that?"

He bent over him, trying to get him to repeat his words.

Rapid footsteps made Rafe whirl, hand grabbing for his sidearm.

"Steady, steady," said Ben Yehuda. "It's not an attack. Not yet."

"That bad?" asked Ari.

"I dismantled a working transmitter. Then Lohr here, nosing around as usual, found this—" Lohr displayed what looked like any other of the miscellaneous hardware David generally lugged about. "Single burst distress beacon. Omni-directional . . . and fused upon transmission."

"How's he doing?"

"He's alive, for now. Essentially he's just 'died' four times, but I caught him. His heart's incredibly strong. We've got to get him to Pryor." *For more reasons than one.* Ari covered the man with another blanket.

"Need . . . to die. Let me—"

"So he knows our language." *We mustn't talk more than we have to,* Rafe thought. "You'll be cared for."

"Where?" Awareness kindled in the man's pale eyes. He glanced around, shook his head, and winced. An incongruous expression of panic, then bereavement, crossed his face. "*Braethra.* Where are they?"

"Looks like you're the only survivor. What's your name?" His voice went tense on the last words.

"You couldn't kill me quickly and have done, could you?"

"What the hell does he think we are?" Ari snapped. "Butchers like on Wolf or Marduk?" The pilot's head jerked at the names of the blighted worlds. Let the civs suspect he'd been there, and Pauli'd have a lynch mob to deal with as well as a war criminal.

"Quiet, cub," his father said.

"We don't do that, mister," Rafe said. "Our commanding officer's got some questions to ask you, so we're taking you in. Meanwhile, you can start by telling us your name."

The Secessionist officer closed his eyes.

Ari laid a finger on his unbandaged wrist. "He's wearing some sort of insignia. Here, I got it." He placed a thin metal band on Rafe's palm. "Like a wrist ID. Numbers, some funny-looking

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symbol, and 'Thorn'? Is that your name? What's the rest of it?''

The man turned his face away.

Hours later, he still refused to speak, clamping his lips against water, ignoring his surroundings. Trying to die, Rafe thought. What would make him try to die, would all but kill him so many times? There'd been some kind of shock, no organic reason for it, as far as he could see. Rafe's medic friends called such conditions fascinomas—they were more figments of the imagination than clinical states, and he'd heard of one such . . . if only he could remember its name! Maybe the man could travel; maybe he'd die on the trip back. One thing was certain.

''I want you to rig some sort of recorder,'' he told Dave. ''If he so much as mumbles in his sleep, I want it on tape.''

If the pilot had survived a battle, that meant that Secess' and Alliance still fought it out, that there were still survivors, still starfarers. Encouraging news, as far as it went. Unfortunately, that transmitter Lohr found meant that some of those survivors might come after this man. Given what briefings had told Rafe about the Secess', he thought it was unlikely, but he'd never much trusted briefings. Why had there been a battle around here anyhow? Somehow they had to get a clear story out of this Thorn character.

Warmth against his side warned him that Lohr had crept closer. ''Look at me,'' Rafe said.

The boy's eyes were hot, and his face was sullen with a hard vindictiveness.

''Stop worrying that I'm going to turn . . . what's that word you all use . . . feral? and kill the—'' Lohr chose an epithet right out of the portside stews. ''We need him. But if he won't talk once we get him back home, you just call me. Me and some of the littlests—we'll make him talk all right.''

Pauli rubbed the small of her back, then laced fingers over a belly she'd been sure couldn't get any bigger a month ago. *Kicking, are you? You'd just better be a fighter*, she told the presence whom she was increasingly eager to see.

Lohr set a half-empty cup down on the table, where it jiggled from the tremor in his hands.

''What about Rafe and the others?''

''They're on their way here,'' he mumbled, rubbing his eyes.

''Any idea when they'll get in? Can you remember anything else?'' Pauli asked.

''No, I can't!'' The boy's voice cracked and when Pauli held out a hand, he buried his face in it and curled up at her side.

''Let me, Pauli,'' Pryor said. ''Lohr, think back. Just a little more and you can sleep. Think back. Think back to when this Thorn came out of the pod. Describe it for us.''

''What were those names he used?'' Pauli interrupted.

''Strange ones. Wyn, Fee, Hal, Kane, Ash . . . something like that. His wrist-ID said Thorn, too. And 'gerd-something. Rafe said he looked like 'gerd of someplace I didn't hear right. Only younger. Can I sleep now?''

''Get yourself some sleep now. And get *bathed*. Lohr, you've done a good job, a man's job, and we're all proud of you.''

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The boy left the dome. Painfully, Pauli rose and activated the comm. It hummed and crackled, hooting as she narrowed the frequency and hit the keys for cipher and direction scrambler.

"Yeager here. Report!"

More humming, during which Pryor settled in at Pauli's side. "How're you doing?"

"Sick and tired of waiting," Pauli snapped. She didn't know if she referred to her pregnancy or lag time while the evacuees decoded her transmission.

"We copy. Go ahead."

"Stay where you are for now."

A jumble of voices made Pauli grimace. "I know you hate it. But you're staying there."

She shut down the comm. Sighing, she walked over to another panel, untaped a stud, and looked at it.

Scanners could pick up the screens set to repel stobor. But if she deactivated the shields, they'd have stobor in the fields. She sighed and decided to hold off. More hurry up and wait, she thought with a grimace. The civs would already be mad enough at her order to stay in hiding up at the caves without her endangering precious crops. And she didn't even want to think of how they'd react to the presence of an enemy fighter in their midst. Best postpone that as long as possible too.

A bump, a muffled exclamation, and a clatter of rolling plastic made Pauli whirl around to see Pryor mopping at spilled soup.

"Want to tell me, Alicia?" For once Pauli's voice obeyed her and came out gentle and persuasive.

The older woman looked up. Beneath chagrin at her clumsiness, Pauli read grief and an appalled conviction.

Help her get it out, Pauli thought. Still in that gentle voice, she went on, "Did Lohr give you any ideas?"

"You learn fast," Pryor said. "Yes, he did." She rose from her knees, wadded up the sopping cloth, and threw it at a box. "Remember what we discussed a few days ago—and whom?"

Pauli managed to stop before she blurted out the name of Pryor's old lover.

"You know, it was possible applications of Halgerd's research that we objected to. You've read studies on twins . . . no, you probably wouldn't have. Well, the basic research on that's very old. They tracked twins separated at birth. They tended to live very, very similar lives. Some people even hypothesized that they could sense things about one another—though of course, no one took this seriously.

"But imagine if you didn't have a twin, but a live, functioning clone. Whom you knew. Whom you worked with. Loved, probably. It would be very efficient, a team made up of clones. Practically telepathic. For all intents and purposes, they'd be the same person. You could train them—tapes, drugs, conditioning. Hell, for all we know, maybe they actually would read minds. And if they couldn't, cybernetic or biotic implants would be easy enough to develop. That's what Halgerd thought. He'd worked out the theory—organic fiber cybernetic implants. Essentially, Halgerd planned to turn people into human multiplex communications systems. He thought it would be easiest with clones. Of course, on basic hu-

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manitarian grounds, we wouldn't let him test it."

Pauli looked at the physician.

"Think about it. It's hard enough to watch someone die. I ought to know. So should you. It's harder knowing —feeling, as some people would say— when a family member dies . . . especially a twin. What about a clone? Long before the Terra blockade, some people hypothesized that in a functional clone group, injury to one of the team would probably be felt by the rest. What if that group were actually linked? They'd actually feel it if one of the other clones died. What's worse, the death agony could be magnified by the perceptions of each clone who felt it. You can see why some people thought that given such a group, the death of one clone could easily kill the others. Even without the organic MUX implants. They called it Kroeber's Trauma. Halgerd called it damned nonsense."

"But you don't think so, do you?"

"No." Alicia Pryor sank into a chair. Her long fingers rubbed her temples, and her face betrayed her true age. "I think that in his own exhausted, inarticulate way, Lohr has described a case of Kroeber's Trauma."

"What makes you so sure?"

Pryor rubbed her temples with long, thin fingers. "Once, when it looked like we might . . . in any case, Halgerd took me to Freki once. Those names Lohr quoted aren't names, Pauli. They're runes, the ancient symbols that the oligarchs revived, runes with names like Wyn, Feoh, Hagl, and Kaon. The man they're bringing in isn't really *named* Thorn. He's a clone. They've tagged him Thorn the way we tag lab animals A, B, C, or D."

"Thorn only 'died' four times," she mused. "Assuming five pilots in a squad, and another on board their home ship—"

One of the Halgerd-clones had to be alive, then. And with Pauli's luck, he'd be looking for his brother.

If only Rafe and the others would hurry bringing in this Thorn . . . this clone of one of the most brilliant offspring of a fighting world. God help them all. Freki had cloned its best and brightest; she saw no reason why other worlds like Tokugawa wouldn't follow suit. And no reason why they should stop at a clone of six or restrain themselves from modifying their clones for speed and strength.

The thought bred worse horrors. Since it was now possible to create a fleet of aces, disposable and replaceable pilots, against whom novice fliers would have no chance, Alliance would have to follow suit. How hard would it be to duplicate Halgerd's research? Granted, Pryor had fled Santayana rather than participate in it, but in wartime, how many scientists would share her scruples? Pauli used to think she had scruples. But that was before Federal Security had grounded her with the refugees here, before the need to protect what might be the last of humankind had forced her . . .

The child-to-be kicked. She laid a hand on her belly to comfort the child who might never be born.

"They're coming!" Lohr overflew the base camp, shouting, and touched down. "They're all safe, and they're

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carrying him in!" he yelled and overbalanced, his wings scrabbling in the dirt, his legs imitating an overturned spider.

"Nice work," Pauli commented as he gathered up his wings, strut by strut. "How far away?"

"Not far . . . half a klick or so."

"Good," Pauli said. "Tell Dr. Pryor to meet me here. Did you check on how they're doing with the hydro tanks up at the caves?"

Lohr looked chagrined, then sulky.

"Go do it. You're the only one we've got able to fly now—" *and you're right, I don't want you around when they bring him in.*

Idly Pauli burnished the pilot's wings she had decided to wear for the first time in months. The autumn sun felt good on her shoulders, and she was glad simply to sit and to plan. A Secess' pilot . . . her opposite number.

"There," Pauli pointed.

"I'll take your word for it," Pryor said.

Pauli rose as they approached. Her keen sight showed her the prisoner, a tall, fair-haired man, paler than most spacers who lay under UV lamps for prescribed intervals. He lay covered, restraints making odd bumps at wrists, ankles, waist, and chest.

Pryor's hand smoothed back the unconscious man's limp hair. She watched the hand as if it were somehow separate from the rest of her, then shrugged and raised an ironic eyebrow. "As much like him as a twin," she said sadly. "Only forty years younger. Concussion. Maybe it broke the implant. In that case, it'll probably be dissolved by now. But I'll test anyway. Bring him inside. Full-body scan, genetic assay and comparison analysis—" she peeled back an eyelid. "Probably I don't want to add any other drugs to what you've given him. Dosage is well beyond normal tolerance—" *but then*, Pauli thought, *we're not dealing with a normal human.*

When doubt was no longer possible, and before anyone could protest, Pryor unfastened the last of the prisoner's restraints.

She started to say something, then shook her head. "Wrong name," she said. "Thorn?"

His eyelids twitched, and his face looked pained.

"Thorn?"

His eyes opened slowly. *"Hwert emk? Thykkjask thik kenna."*

"Still groggy," Pryor said. "He's speaking Frekan. I'll have to bring him back into the real world."

"You're here," she murmured. "I'll explain. And no, you don't know me." She looked down at his blank face and translated. *"Mik eigi manthu.* You haven't known me for years. Can you talk?" she asked, and helped him to sit up.

Carefully she kept her back to Pauli and Rafe.

Pauli studied the man now propped in a chair. They'd dressed him in one of the settlement's all-purpose gray work suits. He was tall, and the way he had arranged himself in the chair gave the drab garment a look of elegance. Pale features and fair hair made it look surprisingly formal. Her eyes flashed from their prisoner to Dr. Pryor. She looked more like *him* than like them, and she had known Halgerd the original.

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Pauli forced herself not to touch her flight insignia as if they were a talisman.

"Our C.O., Pauli Yeager," Pryor announced neutrally.

Thorn Halgerd started to rise, then froze in his place, staring appalled at Pauli's obvious pregnancy. "What kind of people are you?" he demanded, leaning forward, his voice chilly. "You use people capable of giving life as pilots?"

Pryor handed Pauli a printout of her tests. *Sterile*.

"I'll ask the questions around here, pilot."

He turned to Pryor. "How can you waste . . . and she's weathered too! Where are your tanks?"

"What tanks?" Pryor asked.

"Stass tanks," he said a little impatiently. "Everyone knows that the distractions of ship's routine between scrambles only lower a pilot's effectiveness." He looked Pauli over again, then nodded. "Maybe it makes sense, though: breeding's cheaper than cloning, though then the child has to be allowed to mature normally."

Pauli shot Pryor a horrified look.

"So they keep you in stass between missions," Pauli said. She felt the beginnings of nausea curdle in her stomach. Genetically modified, sterile pilots, cloned, carefully kept from any stimuli but what their commanders chose for them. No wonder they fought. It was the only time they were alive. Given what this Thorn betrayed, fighting was the only reason they lived at all.

"We don't do that here," she declared. "Our pilots are human, not killing machines. I was *born* and grew up normally. As will my child. Now, I believe we've humored you long enough—"

"I have no answers for you. And I won't speak to . . . you people aren't even human!" Revulsion as keen as Pauli's thickened his voice, and he turned away.

"The original was even haughtier," Rafe murmured in Pauli's ear.

"Alicia, if he's that used to stass, he can take more medication." Pryor hesitated, clearly thinking of the four pseudo-deaths Rafe had staved off. "Need I remind you, Doctor, this isn't the original Halgerd. He's an enemy pilot who's probably responsible for more lives than you'd want to count."

Pryor readied an injection feed, slapping the patch on Halgerd's neck before he could move.

As he sagged in the chair, she checked vital signs. "I don't like using neoscopalamine after what he's been through. He's fighting it, too." She sighed and increased the dosage. "His eyes will be sensitive. Dim the lights."

Rafe brought out her kit.

"Ready to record," she announced.

Pryor took out a tiny light mounted on a stylus and peeled back one eyelid. "Let me start, will you?"

She flashed the light across Thorn Halgerd's face. "Wake up, pilot. Wake up!"

The light eyes opened, filling with eagerness.

"Name!"

"Thorn, of Halgerd series 6AA-prime. Decanted . . ."

Only twenty years real age. How much of that had been spent in the tanks?

"Orders?" he asked. Even under the

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powerful drugs, his body quivered, ready for action.

"First you report, pilot. Think back to your last wakeshots . . ."

Rafe closed in with the recorder.

Air struck his face. The light about him, tempered to reddish twilight, was beautiful to his eyes. Someone was rumpling his hair . . . Aesc, his group's Number One. Aesc was ship-liaison the way he and his brothers were pilots, so he was always the first one waked from the tanks. Around him were mumblings as his brothers stirred and stretched. The linkage among them pulsed with comfort and welcome.

As usual, he sat up too quickly, but Aesc was ready with the strong shoulder and warm grin that made him Thorn's favorite.

"A fight?" he asked.

Aesc looked troubled. Beneath the hunger any time in the tanks invariably left him with, Thorn felt worry and, worse yet, felt his anxieties resonate in the link. As communications core in the group, Aesc was best at sending or filtering communications from the outside to his brothers. His implant was equipped with an override, and he had had deep conditioning for stability, to keep the brothers strong until the Republic needed their lives. "You were created from our best and our strongest to protect the life of the Republic," their tapes said. "You have no other, or better immortality."

The ones who Ordered told them it didn't matter where they served: they'd be indoctrinated while under stass. But no system was the same. Good pilots learned to study each one . . . from the asteroids of the Wolf System, which they used first as a shield against the defenses of the fifth world, then as a bombardment . . . to the treacherous variable binary in the last system they'd fought in, where they'd lost two Groups to a spectacular stellar flare. Those groups had cut it too close. The Republic had no use for bad timing.

"We've Jumped," Aesc said.

Not a battle? Curious. Thorn swung his legs off his pallet and turned to help the others. Hagl was always slower to wake; Feoh usually was shaky, hungrier than the others due to slightly higher adrenaline production. Which made sense, of course: he flew point. Wyn, a double for Feoh; Kaon, about the same as Thorn himself, and the one who looked most like him. In training, they had been shown holos of their genefather Halgerd, who had created the Groups, and been told that since they were specially honored in being made from his line, much would be expected of them. Thorn had always wanted to meet Halgerd, who used the enemies to gain knowledge and then came back to share it. . . . He had studied what he could find, which wasn't much; it wasn't needful for pilots to know much beyond their ships, flight, armscomp, and what they owed. Most of that they learned in the tanks, loaded into memory through their links. But pride in Halgerd was a thought he'd had on his own.

They were all awake, assisted by the medical officers to a table and fed their restoratives. Thorn smelled food in the room beyond and grinned at the others, a grin reflected on each nearly identical face. The cascade of sensory impressions had to be what born-humans described as intoxicating. As the restorative

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heated his belly, the awareness that linked them in combat and always let them touch woke fully, and they were one, basking in one another's mere existence. It was so good that they had all survived so long. Granted, they were weapons to be expended and he could not begrudge their lives to the Republic who birthed them, but . . .

"Sacred Band," whispered Ben Yehuda. "A . . . rather specialized Theban unit back on Terra, about 3 M back, composed of paired men who had sworn to die before abandoning one another. Alexander the Great wiped them out to the last man."

"Man!" Someone grimaced.

Sterile, fixated on one another, on themselves, given the fact that they were all clones of the same person, such a group had no use on a world where increased population and genetic diversity were required. But as weapons . . . Pauli shuddered, and tried to find a more comfortable position. Just her luck if she'd started labor.

Suddenly, she shivered. He'd mentioned Wolf V. God, had he been mixed up in the raid on Lohr's home? She looked up just in time to see a door slide shut. Lohr was expert in his comings and goings, he'd had to be. She wanted to check on him, and, if he had eavesdropped (which was likely), to comfort and control him—but she dared not leave here. She started to rise, but the cramp stitching itself across her belly warned her against movement. Rafe glanced at her sharply, and she squeezed his hand.

"On your feet," snapped one of the medics, as the First Officer walked in. Thorn tried not to stare at him: he was regular crew: born, not decanted, unique, not one of a Group. Surely he understood that they were pilots, not to be distracted from their tasks. But here they were, wakened from the protection of stasis in mid-Jump, brought to face a true-human who bore marks of fatigue and stress that pilots never carried. Pilots died in space, or rested in their stasis tanks.

After the First Officer finished speaking, Thorn's brothers exchanged glances. They had Orders now, and Orders were never to be protested. Strangeness resonated in the link: so very strange that so many true-humans had been killed that the pilots must serve watches, must leave their protection and work side by side with true-humans. They all looked to Aesc, who was as used to it as any Groupmate ever got. Aesc would help them adapt.

"They briefed me before reviving the rest of you, brothers," Aesc said. "This is an honor they're giving us. We are Halgerd, therefore judged most capable to serve."

Feoh looked shaky all over again. "It's all right," Aesc comforted him, hands on his shoulders. "Medcrew have tranquilizers for you until the stimuli don't overwhelm you. You'll get used to it. We're Halgerd. We can adapt."

"Is that all?" Feoh asked. "The only reason?" His eyes slid wistfully to the sliding doors that hid the safe, comforting tanks from them.

"What's that to you?" Aesc snapped, unusually harsh on Feoh, whose perceptions were generally as sharp as his nerves. "We have our Orders."

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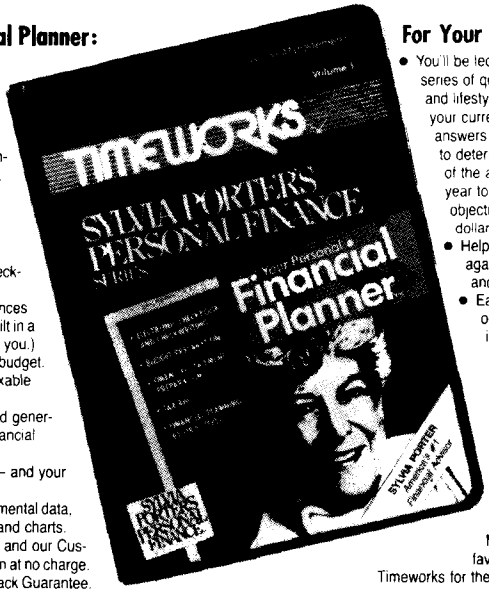

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From America's #1 Financial Adviser

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"Not all," Thorn Halgerd mumbled. "Not . . . not all . . ."

"You have your Orders, your duty shifts, even medication for when the stress gets too bad. What else do you need?" Pryor asked, and stepped up dosage.

Boring, that's what it was. Boring had always been just a true-human word, but now Thorn had a referent for it. Like spending tank-time wide awake, with sights and sounds and smells added. There were duty-shifts, and there were also long periods of time that the true-humans described as "Hurry up and wait." Thorn had sat around until, "Come on," a true-human from Data told him. "Medical's decided that you have to do something constructive with your off-time, and asked us to see to it." She took him by the arm—it felt strange to be touched by someone not med staff or a groupmate, let alone by a true-woman—and led him to the ship's libraries, showing him access codes for a wealth of tapes he never dreamed existed. Glancing about almost guiltily, he noted Feoh and Hagl in nearby carrels, concentrating on tapes Thorn suspected had nothing to do with weaponry or shiphandling. He sighed with satisfaction and punched up the first menu.

The tapes! As their library time increased, their dependency on the anti-stressors declined . . . which, Thorn concluded with a shrewdness new to him, was probably what medical had had in mind. At first he had duly kept to Republic history. Gradually his fascination with Halgerd, his group's genefather and creator of all the fighting Groups, grew to such a point that he had scanned all the available biographies from the databanks. Once he had exhausted them, he discovered Freki with joy, got quietly, tearfully drunk on its proud, plangent songs of victory, even in death, shivered at its history. The deep inlets, the echoing mountains and twilights that Halgerd loved lured him until, inevitably, the moment came when Freki began to be his homeworld too. The way he might choose a weapon (but with more eagerness) he chose the steading he thought of as home, his favorite animals and foods. He cherished this fantasy in secret, suspecting that he'd crossed the line from preoccupation into delusion.

"I thought maybe I should report myself, but . . . I couldn't bear to not-be. And what about my brothers? For the first time I had words to understand what they meant to me. What would become of them if the medics euthanized me?" he asked. (Pryor touched his forehead and sent him deeper.)

Then the next fantasy took root. To *be* Halgerd, who had been a giant among true-humans. Just to know what he did would be the study of a full lifetime, with no time in the sleep of the tanks. Thorn began to study feverishly, desperately. And those too were words for which he used to have no referents.

When, in the privacy of pilots' quarters, Aesc asked him what he read, he answered with evasions, then winced as unease and a surprising, complicit guilt quivered in the linkage. Covertly he studied his brothers. How had he ever thought they looked alike? Ship's day by day, they were diverging from their original unity, Aesc spending more time

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on the Bridge, the others in Medical, Engineering, even Science. Reading, talking with true-humans, spending less time with one another.

And more than talking. He had roused from concentration on a Frekan poem so intense that he might almost have been in a tank, to overhear two true-females.

"What difference does it make? They're not fertile; it's not as if we have to requisition anything."

"How can you talk about them as things one moment, then plan what you're planning the next?"

"How? Boredom, that's how. This eternal waiting for orders, or for the Captain and First to decide how they're going to carry out whatever orders we get." She was pretty, Thorn decided, mildly bemused at that awareness, and she tugged at Feoh's hand. The link heated with Feoh's emotions, then his act. Half the ship away, Thorn trembled.

Feoh wasn't in quarters until late that ship's night. When he returned, he was smug, full of hints and of talk about factions among the true-humans, in the Republic itself, which sparked an answering reaction from Wyn.

Hagl, sturdy, stolid Hagl (where had Thorn learned those words?) banged his fist on the nearest table. "We're not supposed to question. We're pilots, weapons to the Republic's hand . . . not politicians. What's the matter with you?"

"Nothing, brother mine," Kaon murmured at his ear. "They've just gotten a little too close . . . let's call it that . . . to the true-humans, and to some of the women at that."

He and Aesc had to separate Hagl and Feoh. They all winced at the bruises.

"You know what's the matter?" Aesc asked later. He looked as anxious as the First Officer that time he'd come into Medical Center with the orders that had destroyed their peace and—Thorn discovered another word—their innocence.

Thorn shrugged. "Too many stimuli. They take us out of the tanks, and—"

"We're not meant for this!" Aesc interrupted. "We're all changing, and pretty soon none of us will be fit to fly . . . and what then, Thorn, what then? They terminate pilots who can't fly!"

He started to shiver, then to cry. Maintaining override was draining him, Thorn thought; he looked years older than the rest of them. Wondering at his own calm, Thorn dialed for tranquilizers. Thorn ought to feel Aesc's hysteria. What he felt instead was relief.

"I'd like to let him rest before we go on," Pryor said. "You too. You look like you'd be better for—" her eyes narrowed as Pauli winced.

"How long since contractions started?" she accused.

"Maybe an hour or so. Get on with it, Alicia! There's one of this Thorn's group still alive up there, and that distress beacon sent off a message."

Pryor hesitated, and Pauli searched for arguments to convince her.

"I'll cross my legs or something. Promise I won't have the baby while you're interrogating him. Just hurry up, doctor!"

"His heart's weakening—"

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"He's a killer, Alicia. And so am I. Get on with it."

Pryor touched the hypo, increasing the flow of neoscopalamine.

"So you lived with the true-humans, and you didn't like what you saw, is that it?"

"Finally, we got Orders," Thorn mumbled. "Aesc was so happy."

The old eagerness for battle fired his blood, yet he felt strange. The part of him he'd made into Halgerd's mental image, had a word for that. *Feigr*. He kept it to himself; superstition would probably get him euthanized. Anything could happen, was happening. True-people had been arrested . . . "They fight among themselves," Aesc had lamented after one of his forays into Bridge territory.

Before he and his brothers climbed into their ships they bowed to the six brothers of Tojo-group, then nodded to another group of high-cheekboned, dark-haired men he had never seen before. True flying again, thank God, he thought, and knew his emotion of relief for Halgerd's. At last. The linkage of pilot and pilot awoke in Thorn's mind as it did in the others', bringing a warm, welcome sense of rightness, remembrances of adrenaline, of victory, and afterwards, assuaged desires.

Then they sighted the other Group. No warning of another Republic ship in the area had been sent, and the strangers made no courteous suggestion that their Groups combine forces.

They opened fire, blowing Wyn and Feoh out of space before Thorn's blast shields fully darkened. Half-blinded, he fled behind a satellite with his surviving brothers. He couldn't feel the two deaths yet, and the knowledge of pain deferred only made him stronger. "Aesc!" he shouted into his comm.

"We're trying for a visual," Aesc spoke fast, sounding half-frantic. "They know the ship . . . they say . . . I've no referent for the words 'civil war' . . . we've got them on screen."

The tiny screen which held Aesc's face blanked, then divided. Two Aescs? *No,* he thought in horror just as Aesc shouted, "My God, it's US!"

Another Halgerd-group? Thorn was wild with anger and his brothers' unfamiliar terror. Aesc might have no referent for "civil war" but the old songs did:

Bræðr munu berjask ok at bönum verðask,
munu systrungar sifjum spilla;
hart er í heimi, hórdómr mikill,
skeggöld, skálmöld, skildir ro klofnir,
vindöld, vargöld, áðr veröld stepisk;
mun engi maðr öðrum þyrma.

Brother fights brother, and both fall dead,
Sisters' sons slay each other;
Evil lies on earth, an age of Whoredom,
The slash of sharp swords, of shields breaking,
Wind's age, wolf's age, till the world dies.

The next purplish-white salvo took out Hagl and three of their other selves. Adrenaline flamed in his blood; no time to feel his brothers' deaths. The survivors twisted and dived, as deadly lights slashed the blackness and they jockeyed to put their enemies where the star would ruin their vision. He roared with laughter, though he heard Aesc whim-

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per, heard him cry out, then heard only silence in his commset. He and Kaon were paired now, and they took out one, then a second of the enemy group before Kaon too vanished into blue-white vapor, leaving him to duel against the last ship. He glanced at his fuel gauges. Not enough to make it back to the ship, but he didn't care. At the exact moment when he tried one last, suicidal folly, the other ship fired the instant before it exploded. Thorn's damage readouts burned crimson, counting down seconds to the time when the ship would blow apart.

"Preparing to eject, Aesc," he spoke into the silent comm. Ejection was all but a death sentence. He was sorry Aesc would be left alone. "Aesc?"

"AESC!" he screamed as the ejectors blasted him free of the dying ship and toward the surface of the nearest world. His skull felt as if it would burst. Gravity clutched at his spine until the coolness of deepsleep hissed out and engulfed him.

"He was hyped up during the fight," Pauli concluded, "and then drugged for entry into air. So he didn't have time to 'feel the deaths,' as he called it, until you broke into the pod." She felt a kind of horrified pity for the Secess', who'd literally been hard-wired to his squad, to live or die. Her revulsion was . . . it was an actual pain. Then she was doubling over, and Pryor and Rafe were helping her to lie down.

"I told you I wouldn't have the baby until I learned," she panted. "Now I know. There's *two* ships out there, looking for one another. If we lie low, maybe they won't find us, even if we all have to hide up in the caves for the winter!"

Rafe bathed Pauli's forehead, reminded her to breathe regularly.

"Cut power to the outlying fields," she gasped.

"Pauli, count with me—" Rafe said persuasively.

"Do it! Better we lose the fields than our lives!"

"I'll tell Dave," said Rafe, and Pauli could give herself up to the struggle within her own body. Even in the intervals between contractions, she shuddered. Three seasons ago, she had given death. She had resented her assignment here, but when the winged Cynthians had been sighted—intelligent, flying beings—she had been as delighted as the other settlers. Communicating with them had brought her closer to Rafe.

"Steady, Pauli. Breathe in. There—"

At first they'd been grateful to find friends here. But their first reconnaissance had revealed that other creatures populated Cynthia too: segmented creatures about a meter long, most of it mandibles. Eaters, they'd tagged them. Rafe had saved 'Cilla from them, though she'd always walk with a limp, the result of the digestive acid they secreted.

"Contractions about three minutes apart—"

The first reconnaissance had been a failure. The second had been disastrous. She'd been on it along with Rafe, Ben Yehuda, and Borodin, who'd been a ship's captain before things turned upside down. Her captain. Sure enough, they'd sighted eaters. He'd taken one of the gliders he'd built, climbed an abutment, and tried to fly back to camp.

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That was when the Cynthians hovering overhead engaged him.

"I tried—" she gasped.

"You're doing fine, love." Rafe's voice. "Don't think about it."

Pauli couldn't help it. Even as she bore down, she remembered drawing on the Cynthians, felt again the *push* as a civ knocked her blaster aside. "Does it matter what stage they're in when we kill them?" she'd screamed, seconds before a Cynthian brushed the captain's arm with its venom and, unable to glide, he fell into the roil of eaters. She hadn't even been able to recover his ID tags. The decision to destroy the eaters had been hard, harder for the knowledge that in eliminating them, they broke the life-cycle that produced the winged Cynthians as well. Genocide.

Pauli groaned, and felt someone wipe her forehead. "Let it happen," Pryor whispered at her.

She'd had no choice. The very caves where the settlers now hid had been the Cynthians' first. It hadn't been hard to create a poison that destroyed them, but as long as Pauli lived, she didn't think she could look at the sky without dreaming of the splendor of wings they had seen their first nights here.

"The children," she moaned.

"They're fine."

The littlests: they'd tried to raise them free of the taint of genocide their elders bore. And this child, Pauli's own—how would she explain?

Life-giver, Thorn had called her, and the phrase had stung. But now it was going to be true. Please God it was going to be true.

"I don't deserve this," she started to say, but Rafe's fingers brushed across her lips.

The civs in the caves—they should be brought down. She started to say so, but "One thing at a time, Pauli," Rafe told her.

The pains were like firing practice, targets coming at decreasing intervals, as she tried to get a fix on them . . . she was bearing down, she was panting, and she shouted triumphantly, tears rolling down her face, mingling with the sweat.

"Got him!" announced Alicia Pryor, and Pauli heard a thin wail that strengthened until it occupied all the world for her.

"Ships, not one but two up there, the fields wide open to stobor, and now you tell me you've got a *what?*"

Ordering the civilians back to base was practically the first thing she did after the birth of . . . her son, hers and Rafe's. A healthy baby, she thought with satisfaction. Out of all this mess, something to rejoice about.

They'd been arguing since they came down from the caves. She stood up carefully, listening as the argument made the circular trajectory she had expected. As soon as someone mentioned "war crimes" for the first time, she walked outside, carrying the child.

The sight of him silenced everyone for an instant. Then, after a flurry of compliments (which a corner of Pauli's mind rejoiced in, understated though they were), she seized her advantage.

"War crimes?" she asked, seating herself somewhat gingerly on a stool Rafe brought her. "And just which war criminals do you mean?"

She patted her son's back, waiting for

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the murmuring to rise, then die down again. She had orchestrated the questions that she needed asked before coming out here. Now she waited.

"You're waiting for us to ask what you mean, I suppose," someone in back said tartly. Pauli shrugged.

"I don't think I have to," she replied. "You know what we've done here. You know what that makes us. Does it matter that on Lohr's homeworld, the people killed looked like us, *were* some of us, and that on Cynthia they didn't? None of us is stupid enough to say that we just exterminated a swarm of big flying bugs. We knew what we were doing. By rights, we should all be under arrest, if there were anyone here to arrest us." Disturbed by her voice, the baby started to cry. Pauli soothed the child, then handed him to 'Cilla who took him proudly.

"Some of us wanted no part of what was done with the Cynthians," cried a voice from the far side of the circle.

"You're alive because of it!" shouted Ari Ben Yehuda.

"Ari, you're out of such order as we've got. I remember that some of you didn't want any part of what we did. But you made no effort to stop it, as I recall. I'm afraid that makes you accomplices."

Rafe broke in. "Let's say, for the sake of argument, that they're not. In that case, what about it? Do you think you have the authority to conduct a war-crimes trial?"

The muttering grew. In a second it would turn ugly. This was the danger-point while the settlers decided whether to turn vigilante or to maintain whatever order they had managed to preserve.

Pauli leaned back. "Sure, you can take matters into your own hands. No one will stop you. I'm damned if I'm turning weapons onto any of my own people. But if you do that, think what that makes you. And think what it'll do to the children to know."

People broke up into groups and started arguing afresh. Suddenly, the civs' tendency for talking matters to death struck her as a blessed thing.

She glanced around. The perimeter guards were changing shift. One signalled thumbs-up at her. The weather had been fairly chilly, which made the stobor torpid. But today was warmer than the week since she'd had the fields deactivated.

"Well, what do we do with him?" The question she most wanted asked brought her attention back.

"What do we do with him? Dr. Pryor has an answer to that. Shall we let her explain it?" Pauli sighed, readjusted herself, and resigned herself for a long, long argument about whether Thorn was killer or victim.

The dome that housed communications gear stood somewhat removed from the rest of the buildings. Pauli crouched nearby, waiting. Her macro-binoculars dangled from her neck. From time to time, she raised them and scanned the sky where flashes of light told her that one ship had apparently forced the other to turn and fight.

People planted near the "infirmary" in which Thorn Halgerd was confined had carefully let that information slip.

If this doesn't lure him out, nothing will, Pryor had said.

It was logical that Halgerd would

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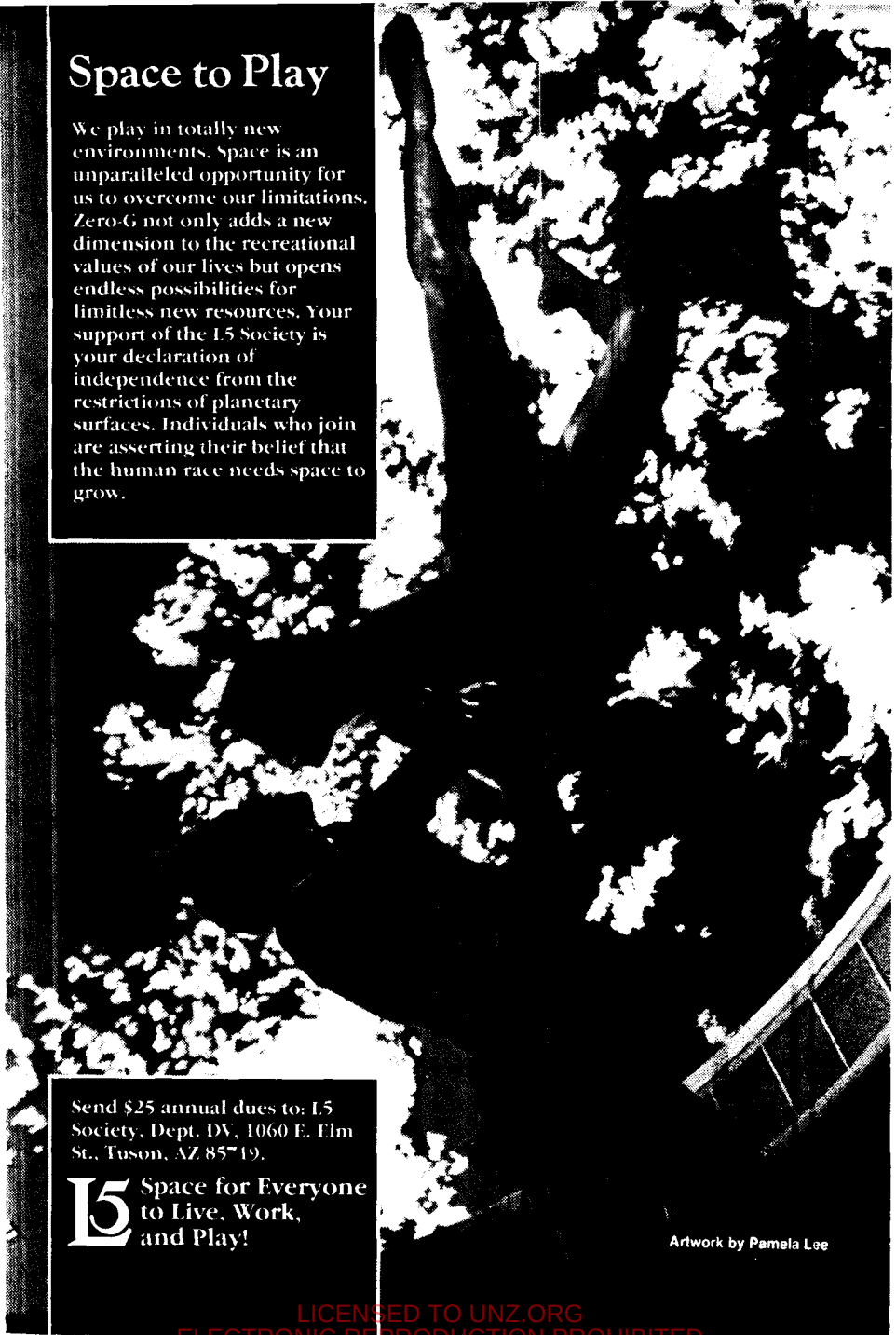

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want to rejoin his ship, team back up with his one surviving group-mate, and—to borrow his slogans—serve his Republic by giving them information of this settlement.

"I still don't like the risk you're taking!" she told Alicia Pryor.

"He's conditioned not to hurt what he calls life-givers," the physician retorted. "Besides, I think he trusts me."

What was more to the point: Pryor, remembering Halgerd, trusted him. Perhaps too much. Halgerd had been ruthless, but never cruel. Thorn Halgerd would use his greater-than-Halgerd's speed and strength to subdue her, not harm her unless she struggled. Which she would not do.

Pauli had started to protest further until Rafe grasped her arm. "She's trying to absolve herself," he hissed at her. Damned strange expiation, Pauli wanted to say. If Pryor wanted to atone, she could do so better by practicing medicine, not putting her life on the line.

Damn you, Halgerd, move it! Hundreds of kilometers overhead, the ships feinted and fired. Inside the commhut, Pauli had only to access the computer to see the battle on screen. She was itching to do just that, and she could bet—had bet—lives on her guess that Halgerd wouldn't resist it either.

"We've freed up Alicia," Rafe's voice from her earplug told her. *"She's not hurt. Get ready, Pauli."*

Ahhhh, here he came. The tall, lean figure, crouched almost double, slipped from the darkened infirmary door, using every scrap of shadow for cover, and headed for the dome. He was inside before she could stand up.

Not that he could do any immediate harm in there. Ben Yehuda had reconfigured the comms. Now Halgerd could receive transmissions but whatever he transmitted in turn would only go to the infirmary where, by now, people would be listening in.

"Pilot Yeager . . . Captain?" the Secess' clone stated as she entered. "Should you even be up and around this soon?" His fingers caressed the comm gear.

"I'm surprised at your concern," she remarked. "I trust you left my medical officer in one piece?"

He nodded. "I hope you're unarmed. I should regret injuring you."

"And yet," said Pauli, "you have no hesitation in telling your people—if they still live—where we are. Knowing what they'll do to us . . . what you've done to groups like ours?"

"Ah!" Satisfaction in his tone as the coordinates of Cynthian space glowed on the screen. Two red blips dodged and fired across it at one another. Thorn punched in codes for identification, then reached for the transmitter, then laid his hand down. Doubt flickered in the gray eyes.

"What happens if your home ship is the one destroyed?" Pauli asked. "Will you still alert the other ship?"

"I serve the Republic," Thorn recited absently, his eyes on the screen. One ship took a strong hit, and he flinched. His ship? The readouts he demanded didn't look good. It was probably venting air, sealing off the damaged compartments, never mind the crew who might be trapped. Or lost. For a treasonous moment, Pauli winced too. Then she went back on the attack.

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"That ship killed your brothers! It turned on your Republic!"

"Quiet now—" he whispered, watching the silent, lethal barrage on the screen until the first one went up in a tiny, brilliant sun that cast weird shadows on the dome's sloping walls.

Thorn punched up the survivor's identification code. With a growl of satisfaction, he reached for voice transmission.

"Thorn, Halgerd Group 6AA, to base ship. Aesc, are you there?"

"Are you sure he's alive?" Pauli asked. "You heard him cry out while the rest of you were out getting zeroed. He sounded pretty distraught. Don't they terminate you when you're that out of it?"

Halgerd increased reception.

"They're short-staffed," he muttered, half to himself.

"You hope!" Pauli snapped. She had to get him to argue if she were to try to turn him. If they couldn't turn him, they'd have to kill him. The clone's hair glittered in the dim overhead light, and she wondered what went on in his brilliant, starved mind.

"Another thing, Halgerd," she said, noting how he started at the name. "If they didn't kill him, what makes you think he survived the deaths of the other four? You almost didn't. Pryor thinks she knows why you did."

"You're getting to him." Pryor's voice overrode the pounding in her ears. *"Try to keep him talking. Make him realize that he's got no future up there."*

"Shut up!"

"And if I don't? When I came in here, the first words out of you were that you were worried I was moving about too soon after Serge's birth. Don't you see? That whole time you were turned lose in the databanks—you and your groupmates differentiated themselves from one another so much that the bond was strained. Then you hit your head and your implant broke, to be dissolved and eliminated. That's why you lived."

"Aesc, please, Aesc, come in."

"Your Aesc is a stranger to you now," Pauli told Halgerd's back. "You have nothing to go back to. A broken group? Sure, so they decant another Halgerd-clone. Another six-group. Do you think they'll let you and your Aesc join it? Will they give you another implant? And what will you do if the new group can't accept you?"

She leaned forward a little as if she had a knife and were going to slide it into the place between his hunched shoulders. The gray cloth had darkened there with sweat. "You're contaminated, Thorn. That's how they'll look at you and Aesc."

"Don't forget individuation, Pauli. Tell him they don't dare take him back, he'll poison all the groups.

"You've *individuated*, that's what. You and Aesc, if he's still alive. Do you know what your genefather, as you call him, would have done with contaminated subjects?"

"My life or death doesn't matter," he mumbled.

"Then why're you trying so hard to get home? To a ship?" Then revelation hit her. "Or is it Freki you're dreaming of? Look at what thinks it's human—a cyborg clone!"

Halgerd banged a fist down on the console. "Damn you, woman. Life-

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giver or not, if you don't shut up, I'll gag you!"

Rafe's voice broke in. *Lohr* what, *Dave? Check the blasters . . . oh shit! Some security. Pauli, be careful. Lohr's managed to steal a weapon, and he's overheard . . . he's heading for you.*"

Damn. She'd have to push even harder. But as she started to move toward Thorn, the comm went live.

"Thorn . . . Thorn . . . can you hear me? Got a fix on your distress beacon. I didn't feel him die, I tell you! Let me try to raise him . . ."

"Aesc . . ." Thorn's voice was hoarse with relief and longing. "Aesc, I'm here . . . at . . . wait, I'll transmit coordinates—" again the flurry of skilled fingers on the keyboard. It was only a matter of moments before he realized that the comms had been tampered with, Pauli knew. *Get over here!* she prayed silently, before remembering that Lohr just might.

A different voice filtered through Aesc's pleas for contact.

"Told you . . . Halgerd AA's broken. The last pilot died, and this one didn't feel it. I think his implant's deranged. With respect, sir, I think he's too unstable to be worth keeping."

"Look at the ship, Thorn," Pauli whispered. "Look at the damage readouts."

"Thorn!" his groupmate's voice faded.

"Damage control!" Shouts of rage, distress, and fear blurred together, muffling the thud as Thorn's last brother fell forward onto his duty station. Then pure white flooded the screen, fading into a red-tinged haze. When it died, the screen was blank.

Thorn Halgerd gagged and doubled over for an instant. When he turned around, grief and anger battled in his pale eyes.

"He's dead."

"But you're not. Doesn't that prove what I said, Thorn? You're not just one of six any more. You're unique. Alone!"

"Aesc—" it was a sad whisper. Then Thorn tensed again and glanced back at the comm. "You rigged them—"

"We couldn't let you contact the ship, Thorn. You trust Dr. Pryor, don't you? She said—"

"Lohr dodged us. He got a head start on Rafe and the others." Not now, for the love of God, Pauli raged silently. Not when I've almost got him. And if someone's going to shoot him, please, not Lohr, not after all we've done to turn him too. . . .

"Dr. Pryor explained about clonegroups and individuation to me, Thorn. I'm a pilot too . . ." *Yes, though this is the first time I've ever been in combat with one of you* . . . "it's not real easy for people like us to understand, is it?" Pauli let her voice go gentle and warm. "Aesc never really had a chance, Thorn. I'm sorry. Really, I am. But don't you think he'd want you to live? You've got a chance now, to be alive, not a fighting machine kept in a stass tank until they need you. To *be* Thorn Halgerd, not one of six identical faces. To be unique, valued for yourself alone. My God, man, don't you want it?"

"You're doing just fine, Pauli. I think he's ready to break."

Halgerd whimpered and sank into the chair by the comm.

"What you feel is grief, honest, human feeling. Not the implant. That's

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gone. But it was never all that you felt for Aesc."

Static from the comm crackled in the tiny dome. Thorn's shoulders heaved. Pauli could hear strangled sobs. She took a deep breath to steady her nerves, then moved forward, her hand out, ready to lay it on his shoulder, to comfort and bring him back to the infirmary where Pryor could tend him, completing the change—

The door slid open, and Lohr darted in, a blaster incongruously large and ugly in his hand. Pauli activated the light-panels. The darkened dome was too much like the burrows Lohr would never wholly forget. His eyes were all pupil, and he crouched as if he were hunting. He flinched back at the bright light, but didn't drop his weapon.

He blinked, and then his eyes adjusted. Pauli saw in them all the fear and hatred of the feral child they had rescued and tried to heal . . . would have healed already, if the man who lay weeping across the comms hadn't broken his fragile peace.

"Lohr," she said. "Please. Not you."

He glanced at her in dismay, then waved his weapon at Halgerd again, his dark, clever face intent on his prey. Yellow light shivered on the blaster's thick muzzle.

"I'm sorry, Captain. But when I heard he'd been on Wolf. . . . I have to do this!" his voice scaled up and broke. But when he spoke again, it was deadly steady. "Get up, killer. Wolf V was my home. Your boys used it as a target range for meteorites. And after you had your fun, you came in with lasers. Some of us lasted for months. But you're not going to. You ought to thank me."

"Here's one way out," Halgerd muttered to himself.

Gauging Lohr's grip on the blaster, Pauli decided she probably couldn't deflect Lohr's aim without frying herself. She started moving forward anyhow. *Why am I risking my life?* she asked herself. *Certainly not for Halgerd.*

Not for Halgerd. For Lohr, who in the time he'd lived here had learned love and decency. Who, despite his protests, was still one of the "littlests" whom the settlers had tried to preserve from the consequence of destroying the Cynthians, to make them remember that law and decency existed.

Pauli thumbed the transmitter wired to her collar.

"The damned fool's here, friends. I'm going to try to talk him out of killing our guest."

She turned to Lohr. "You saw what we did to the Cynthians. Do you have to add to it, be no better than the rest of us . . . no better than *him?*"

His face twisted, but his hand never shook.

"All we want, Lohr, all we ever wanted was a place where you kids could be safe. He's given up, now, Lohr. You can kill him now. But all of the littlests will know it, and they'll know that we failed to protect you. Are you really going to steal their security from them?"

Pauli's earplug whispered. *"Don't come in,"* she warned. Lohr was so shaky he might fire on friends.

Halgerd looked at her. "You stay clear," he said, and his voice was bleak. "I accept execution."

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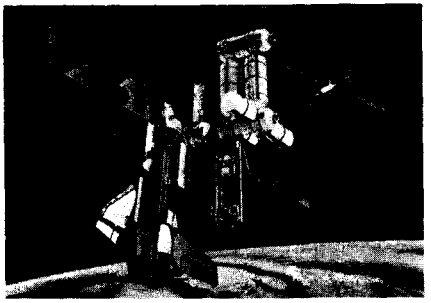

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"He's just a boy, and he's not going to execute anyone," Pauli snapped. Her nerves were jangling, she hated mental-type warfare, and her breasts ached, a sure sign that Serge was crying to be fed. "Lohr! Give me that blaster."

She was walking toward it, reaching out for it, she almost had it. . . .

"Stobor!" Shouts rang simultaneously outside the dome and in her earplug.

Pauli threw herself at the equipment. "Not a life-giver!" she heard Thorn shout, and felt a hard shoulder hit her somewhere around the hips, and send her sprawling. Even as ozone stank in the tiny dome, she punched up the field generator. At least no more stobor would get through.

"Someone get Ben Yehuda. His cub . . . down by the river . . . surrounded by them—"

Pauli started to crawl on knees and elbows toward the door. Even her teeth hurt. Lohr was trembling violently, eyes on the blaster he had fired. It was only by the merest luck he hadn't wiped out Pauli, the equipment, *or* Halgerd, who levered himself up and balanced unsteadily, favoring his left leg, the one that had taken the burn that might have hit Pauli.

"Give me that thing!" Halgerd snarled. As light shrieked out to score the dome's tough wall, Halgerd's hand whipped out and slashed across Lohr's wrist. Then he stumbled forward, was out of the dome, half-running, half-limping at a speed amazing in anyone, let alone a man with a burned leg. Using Lohr as a prop, Pauli dragged herself to her feet.

"He break that wrist for you?"

"No, ma'am." After scaring the hell out of all of them, damned near frying her, and ruining irreplaceable equipment, he was back to acting like one of the littlests again.

"Luckier than you deserve. Come on!"

Pauli started toward the perimeters, but walked straight into Pryor's outstretched arms. Lohr darted past them both.

"And where do you think you're going?"

"Fields. Halgerd's got the blaster, but Lohr marked him first. I have to get there."

She noted that Pryor's face sported a fine bruise and she was still a little unsteady on her feet. "Want to try to stop me, Alicia, or want me to help you get there too?"

"You've got yourself a deal. Now move it!"

Ari had found himself a flat rock to climb on and was trying to beat off the stobor from there. He had a stunner, but its beam flickered, a sign its charge was all but dead. Stobor swarmed out of the river, which ruled out that means of escape.

The wrong kid was armed! Rafe thought, enraged. Here Lohr was, playing mad blasterman, while Ari, who could use a blaster to fight off stobor, was probably making do with a stunner, if he was lucky, and a stick, if he wasn't. He headed down toward the river, alert for stobor himself. Around him red lances flared out as people fired at stobor. The air was foul with burning groundcover and charred stobor.

Rafe brought up beside three people

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who had their arms around David Ben Yehuda.

"Let me get through!" Dave screamed. His face ran with sweat and tears.

The beam from Ari's stunner faltered, then died altogether, leaving him in the dark. "All he's got is a shovel!" Dave cried out hoarsely. Rafe hefted the blaster. It wasn't weighted for throwing. Better get in close.

"Stay back, Dave," said Rafe. "I'm going to try to throw the boy a blaster. That'll let him defend himself while we get to him. He's a tough kid; we'll get him out."

His feet crunched on things he hated to imagine. Heavy boots cushioned him from the tiny shocks released by the dying stobor. Then a tall figure pushed past him. Rafe weaved, trying not to stumble face-down into the char as Halgerd's deep, accented voice shouted, "Edge on over to the left, boy. I'm coming."

Halgerd ran as if he outraced ten devils, one of which had already burned a chunk from one leg, past the front line of stobor-fighters, toward the rock which the first wave of stobor were now beginning to surmount.

"Hold your fire!" screamed Rafe as Halgerd headed directly for the stobor. One good shock would warn him, he thought, though with that bad leg . . .

One shock was all it took. Halgerd grunted with pain, drew his legs under him, and leapt, a wide, shallow leap that brought him onto Ari's rock, where he flung one arm about the boy to steady himself and begin firing steadily, systematically at the creatures.

Pauli ran up beside Rafe, panting for breath. Her aim was true.

Rafe pointed. Pauli gasped, then tried to speak. "Lohr marked him."

"He needs our help," Rafe said.

"He's got it," Pauli said.

Ahead of them Halgerd wavered visibly, recovered, and kept on firing. "I think he's weakening," Pauli said. "If he falls now, we stand to lose both—"

"Here," Halgerd roared. "*Catch!*"

Snatching the stocky Ari in one arm, Thorn Halgerd flung him over the blaster fire so he landed on top of them. Then Halgerd fell, his arms and legs thrashing wildly in the churning water. Then they were still. There had to be at least six stobor there, Rafe thought with a groan.

Lohr grabbed a blaster and started burning a path to the river, firing methodically and pressing forward as quickly as he could.

He made it to the shore, was pulling Halgerd from the murky water, then flinging himself down, head on his chest. "No!" the boy muttered. "Not another one dead. Not if I can help it!" He thumped the man's chest, listened again, and swore. He tilted Halgerd's head back to clear the air passage, meticulously adjusted his hands over the man's sternum, and began to press down rhythmically.

"Do you believe that?" Rafe asked, as Alicia Pryor staggered to Lohr's side. Only when the adults took over resuscitation did he let himself collapse.

"I think we've turned two lives around tonight," Pauli said happily. She mopped at her eyes and coughed. Rafe started to put an arm about her, but she swore and said the smoke choked her.

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"Ari's fine. And he . . . Thorn's going to make it," Pryor announced. "Don't ask me how they augmented his circulatory system, but it's working." She wiped a clean streak across her ash-smeared face.

"He's trying to talk," three people said at once.

Though Pryor began to hush him, Halgerd struggled onto one elbow, his eyes searching out Lohr. He licked his lips, then tried again.

"Why—"

Pauli pushed Lohr forward to face him. "Answer, dammit!"

"I . . . Ari's a friend of mine," he said, eyes downcast, one foot scuffling in the dirt. "Besides, when we first got here, well, my little sister limps 'cause there were these things, these eaters. They're all dead now, and they call it, call it genocide because the eaters grew up to be smart. To fly. It was wrong to kill them, but they did it to give all us kids a chance to grow up straight too. You . . . you did a wrong thing, but you gave Ari a chance. He would have died!" Then his face contorted, and he twisted away, burrowing against David Ben Yehuda's side.

"Don' . . . don unnerstan' . . ."

"I promise you will," Alicia Pryor told him. Halgerd's eyes filled with tears and a question he was too weak to ask.

"Why? Let's just say I knew your father a long time ago." She smiled, and this time Halgerd smiled back. Then a spray hypo blanked the pain of his burnt leg and sent him into dreamless sleep.

When Thorn Halgerd's leg healed, he announced that he planned to climb to the lost Cynthians' caves and live by himself.

"If the caves housed your civilians, they'll do for me," he'd told Pauli, Rafe, and Alicia who had gathered to see him off. "Better, probably. I don't see the ghosts in them that you do." Thorn's nostrils flared as if he relished the air. The weather had turned very cold, and the sky shone the color of amber in which tiny plumes were frozen. His eyes scanned the horizon appreciatively, then went dark. "I have enough of my own."

"*I wish you'd reconsider*," Rafe said.

"You'd trust me? All of you? Even the civilians?"

"Lohr does. And we're all alone here," said Pauli. "You more than most. If the scramble we watched is any indication, your Republic has all it can do fighting one another without checking every one of the No Man's Worlds for settlements."

How was her own side doing? Pointless to ask. Now her "own side" was the human Cynthians.

"Look," said Ben Yehuda. "It was a test to destruction. You don't destroy easy. In fact, you passed a test your . . . father didn't. I'd say you're an improvement on the original."

Pryor stepped forward. "You know," she said very softly, "we could probably turn around that problem of sterility."

Thorn froze. "Is that why you saved me . . . for the Halgerd genes?" At the look of sorrow on her face, his own face twisted, that eerie resemblance flicker-

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ing between them. Pryor shook her head.

Pauli opened her mouth to try, one last time, to persuade him to stay.

"Let it be," he said, his voice gentle, almost wistful. "I have to get away. Look, let me try to explain. You say everyone's alone. Well, I wasn't. All my life, there were voices inside my head. Others just like me. Then they were gone, and I was one piece of a lost whole. That's not what you call alone. That's lonely. I almost died. Sometimes, at night, I still wish I could. Now you say I'm unique, my own self, but it still feels like 'lonely' to me. I have to find out who 'myself' is, and I want to do it without a thousand voices clamoring at me. Now I need to see these caves, learn what price you paid to live. I already know what price I—and my father—paid."

"And when you've learned what you have to?" Pryor asked.

He nodded at her. "Why then, I'll come back down, if you'll all still have me. To take up the future you offered to an old friend's son." There was no irony in his words; already, Pauli thought, Thorn drew comfort from the generous illusion of a past that Pryor had helped him spin. Pauli remembered the poem she'd quoted to herself the night Thorn reached Cynthia. *"Consequently I rejoice, having to construct something upon which to rejoice."* Thorn would construct it quickly and well.

"You know, you take after your father." Pryor forced herself to laugh. "You're just as stubborn."

He shouldered the pack containing the food, the heatcube, the comm, and the other few things he had consented to accept from them and started for the hills.

"Wait!" From around the curve of the nearest dome raced Lohr, a long bundle of struts and gleaming fabric bumping on his shoulder. His wings.

He came to a sliding stop and offered them to Halgerd. "It's a loan, see? You're a pilot; you'll know how to use these. So when you want to, you can come back down easier."

Halgerd stared at the wings resting lightly on his hands. Gently, he closed fingers around them. "I'll bring them back," he promised.

Halgerd turned. Without looking back, walked toward the foothills, favoring his burned leg, but only a little. Silently they watched until all they could see was the sun glinting off his fair hair and the wings he bore. ■

● The popular mind often pictures gigantic flying machines speeding across the Atlantic carrying innumerable passengers in a way analogous to our modern steamships. It seems safe to say that such ideas are wholly visionary.

William H. Pickering, 1910

Submitted by G. Harry Stine

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Jay Kay Klein's biolog

Starting with *Space Cadets* handed to her by her father, Susan Shwartz became a second-generation SF reader. Twenty years later with the September, 1980 issue, she became an *Analog* writer, just a year after selling her first science fiction story, "The Struldbrugg Solution."

Born in Youngstown, OH, she received a B.A. in English at Mount Holyoke, then an M.A. and Ph.D. in English at Harvard, with several summers of study at Oxford. Unlike the typical graduate of Holyoke who majors in some scientific discipline and goes on for a doctorate, Susan was a Medieval scholar.

PR and market research jobs in New York led to work at an investment firm where in-house communications, databases, electronic mail, documentation, and other vital material are like precious eggs placed in one computerized basket. Susan's job is to watch the basket.

As a medievalist she had to know how the technology of a period tied in with its sociology, theology, language, and literature. When writing, she is careful to coordinate all these aspects of whatever era her story is set in. Early stories were based on biological sciences and anthropology. Now she is starting to consider for story purposes how the military mind is liable to develop in coping with future technological stresses of warfare. Last year at the Futurists II USAF symposium, she joined *Analog* writers Gordon Dickson, Larry Niven, David Brin, Dean Ing, and James Gunn among others in discussing expected requirements of future personnel.

Susan considers it important to be "literate" in whatever culture she is dealing with. However, she notes that C.P. Snow's delineation of the "two cultures" of science and humanities all too often divides otherwise intelligent people into two distinct camps. Persons interested in science fiction, though, are much more likely to be knowledgeable in both areas. A writer also of fantasy, she feels the history and mythology of a fantasy setting must be used with as much precision as the biochemistry in an SF story.

Persons solely with a background in the humanities have pretty much seized control of the organs of critical review up till now, generally relegating SF and fantasy to some presumed gutter level. Dr. Shwartz has been counterattacking with reviews in the *New York Times*, *The Washington Post*, and other influential forums, along with personal arm-twistings of cornered editors.

Three of her anthologies have appeared, including the fantasy *Moonsinger's Friend* in 1985. Her novel *Silk Roads and Shadows* will probably be out later this year from TOR Books, set in the ninth century and replete with extraordinary synchronisms between the road's two termini, China and the Eastern Roman Empire. ■

Susan Shwartz

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Margaret L. Silbar

SUPERstrings

"Why, child," said Humpty-Dumpty, "if I were to give you an examination. . . . I would ask you only questions which have no answers; they are the best kind, you know!"

"What's the sense of a question without an answer?" asked Alice.

"Ah, that's the kind that makes you think," *he replied.*

"Think about what?" asked Alice.

"About what the answer could be."

"But I thought you said there was no answer."

"There isn't," replied Humpty-Dumpty, "and that's the beautiful part of it."

From *Alice in Puzzle-Land* *

Despite that apocryphal orange, or whatever it was, that hit Isaac Newton on the head sometime in 1666, humans continue to ponder the riddle of gravity. The insight Newton gained, while sitting out the bubonic plague in rural Woolsthorpe, enabled him to conclude that the *same* force which is responsible for the fall of a piece of fruit from a tree is also responsible for holding the Moon in its orbit around the Earth. This was Newton's Law of Universal Gravitation.

Two hundred years later, the forces of electricity and magnetism were shown by Maxwell to be just one single force, electromagnetism. Some forty years after that, the young Einstein set out to see how Newton's theory of gravity could be made consistent with that newfangled theory of electromagnetism. He eventually arrived at his General Theory of Relativity, which is still, seventy years later, the best theory of gravity that we so far have. Today, it stands essentially as Einstein left it.

The present state of the gravitational art is, however, very much in a state of flux. We are told that it lies within the realm of possibility that, in addition to real oranges which fall from trees, there are *shadow* oranges, which fall from *shadow* trees. The difference between the two? Objects from the shadow world, if there is such a world, would interact with the ordinary world *only* through the gravitational force. If one of the "strings" said to be responsible for this shadow world were to pass through you, you wouldn't feel a thing. But if a shadow orange were to drop in on the mental processes in your head,

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that might be a different matter altogether.

However did we get from universal gravitation and *real* lemons falling from trees to *shadow* lemons? What is the source of the conviction of some that, in our understanding of the universe, we are but "one step from creation"? Part of the answer, of course, lies in the ongoing search for the ultimate and most basic constituents of matter. It has taken us far afield. Not only are there gravitational and electromagnetic forces, but we now recognize the existence of a fundamental weak force (to run the sun) and a fundamental strong force (to hold the proton together). Physicists have long been trying to understand these four distinct forces in terms of each other; Newton, Maxwell, and Einstein have only been some of the early superstars in this endeavor.

In taking on this task of unification, some physicists start from the quantum world and the now largely accepted electroweak theory, a quite successful amalgamation (albeit partial) of electromagnetism and the weak force. Others come at the general problem by trying to bring gravity into the realm of quantum microphysics. However, because the hypothesized quantum of gravity, the graviton, has never yet been seen, the skeptic may well wonder if they search, as the French say, "for a white blackbird."

In any case, it is out of the latter effort that the latest bandwagon, "superstring theory," emerges. It has been built on a foundation of many earlier ideas, including that of supersymmetry, which is, some say, "the supreme symmetry." Supersymmetry relates the particles which mediate the forces, the bosons, to those which make up matter, the fermions. Before supersymmetry, bosons and fermions had to be considered as entirely different kinds of particles. It is fair to point out at this point that there is so far *not a shred* of experimental evidence that such a symmetry occurs in nature (in any really fundamental way)! Yet, it is very attractive theoretically.[1]

Extending the supersymmetry idea to "superstrings," where the dynamical objects in the world are no longer pointlike "particles" but one-dimensional things called "strings," it appears possible that there is, after all, a consistent *quantum* theory of gravity, unified perhaps with all the other fundamental forces. Of course, the efforts to get to that blissfully unified state can't help but be interesting.[2] Witness the crazy idea of a shadow world (which will be expanded upon toward the end of this article)!

The decade of the '50s was a chaotic time for physics. As the British journal *Nature* once wryly remarked: "It is perhaps surprising that no new meson was

[1]There's no use quibbling with a mathematical theory if it echoes reality. Otherwise, you have to subscribe to the view that Nature wouldn't dare *not* use such beautiful equations.

[2]In an article such as this, it is difficult to imagine how even a *naive* writer of science articles can make a mistake! What is happening today is that fundamental notions of how the universe works are being questioned. These include, in particular, the very nature of space, time, symmetry, and boundary conditions.

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reported during the symposium, though almost a month had passed since a previous meeting of nuclear physicists in Copenhagen." The elementary particle population was then undergoing a major population explosion. The invention of the quark model in the '60s and '70s was one attempt to sort out the many proliferating particles.[3] Another involved the development of "dual resonance models," which are a direct antecedent of today's superstring theories.

These latter models tried to classify the proton and its many brethren as the various vibrational states of "strings"; they were discovered by considering formulas for what are known as "scattering amplitudes." Physicists make statistical predictions of what will happen in a particular situation—the collision of two particles, for example—by calculating (or postulating) a scattering amplitude for the process. There are many possible outcomes, and each has a definite probability. These probabilities are given by the squared magnitude of the scattering amplitude, which is a complex number depending on quantities like energy and scattering angle.

Historically, these dual models date back to seminal work by Gabriel Veneziano, then at the Weizmann Institute of Science in Israel. The next step —undertaken by a number of workers in the field—was to show that Veneziano's model for a scattering amplitude had a more general underpinning. For example, the model (and its extensions) satisfies the general requirement that the sum of all the interaction probabilities adds up to one (a property called "unitarity" by the cognoscenti). Meanwhile, Yoichiro Nambu of the University of Chicago[4] and others discovered that the particle states that occur in a dual resonance model can be thought of as the quantum states of a special sort of vibrating string.

Such strings are called "light strings," for their ends always move with the speed of light. Their mass is not at all like that of an ordinary string, say, the one you use to tie your shoes. Any mass of the light string is due entirely to the tension on the string. Stretch it and its mass increases proportional to its length; this new mass comes from the energy (remember $E = mc^2$) involved in the work done to overcome the string's tension.

To see how the dual resonance models tried to relate this back to real particles, think of the "pion," a meson believed to be a major contributor to the binding of protons and neutrons to form atomic nuclei. In the parlance of quarks, the pion can be thought of as a string with a quark attached to one and an antiquark to the other. If excited—stretched out —the energized string would represent

[3]You may think things have calmed down, but in fact the chaos has just moved down to a different level: quarks, gluons, glueballs . . . One may perhaps derive hope from a biological curiosity that the search for the ultimate structures will one day come to an end; that living organisms tinier than a virus have been discovered but they lack genetic material.

[4]It is remarkable how often, in the history of elementary particle physics, the most fruitful ideas in the field can be traced to Nambu. Yet he, unlike others who it would appear are far less deserving, has not moved center stage in the sociology of elementary particle physics.

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the next higher mass brother of the pion, a particle known as the "rho meson." Etc.

There were severe problems, however. The ground state in the early string theories turned out to be a tachyon—that is, a particle which moved faster than the speed of light. (In Einstein's relativity theories that's a "no-no.") Moreover, to mesh quantum mechanics and Special Relativity, the string—assumed to have just one dimension, that of distance along its length—required the space in which it moves around to have 25 dimensions. As a result of these undesirable features, the dual resonance model was temporarily laid aside (for ten years). Only very recently has it been resurrected by people interested more in gravity than in the spectrum of "elementary" particles, nowadays considered to be not-very-elementary.[5] As one of the founders of dual-resonance models, John H. Schwarz of the California Institute of Technology, recalls, "In the course of unsuccessfully trying to solve one problem, we inadvertently came upon a scheme that appears promising for shedding light on another."

Meanwhile, most modern-day unification schemes took a more conventional tack, one calling for no more than the four-dimensional spacetime well known to Einstein. They built upon a discovery elucidated by Hermann Weyl in the 1920s. He showed that the description of a force is not basically altered by any changes in the length scales of the rulers or the time scales of the clocks that are carried as measuring instruments to various points in spacetime. This symmetry principle is called gauge invariance, after the gauges, or measuring instruments, to which Weyl referred. It is at the heart of all (or almost all) modern day field theories of fundamental interactions.

It is only in this century, after Weyl, that it was recognized that Maxwell's theory of electromagnetism, even in its quantum form, is a gauge theory. This field theory has been extraordinarily successful; it predicts experimental quantities to accuracies of a part per 10 billion! It has also been the paradigm for all later quantum field theories.

Starting from Weyl's symmetry, the gauge invariance, it was much later shown that Maxwell's equations, based originally on Faraday's experimental laws, can be *deduced* mathematically. One can even derive the fact that the photon, the boson mediating the electromagnetic force in the quantum mechanical version of the theory, is massless. This idea, that the very existence of forces is required by the underlying symmetries of nature, is one of Einstein's lasting philosophical legacies to modern-day physics.[6]

In the mid-50s there emerged a new

[5]A historian of science has remarked that theories in physics never seem to be pronounced "wrong" and thrown away; they just reappear in new guises, perhaps applied in different contexts.

[6]When you come right down to it, physicists don't have all that many tools—the concepts of symmetry (or asymmetry), analogy, reductionism . . . Some people add to this list a subjective concept called "beauty," which is some kind of mixture of mathematical consistency, economy, and naturalness.

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class of gauge theories, which, in contrast to electromagnetism, are non-linear. Though not recognized as such for some time, this was undoubtedly a step in the right direction. (Einstein had long before concluded: "The true laws of physics cannot be linear.") Because of their nonlinearity, the boson fields described by these newer kinds of gauge theories can interact with themselves, not just with external sources. The electroweak theory, developed in the '70s, grew directly out of this nonlinear work of the '50s.

The gauge symmetry of electromagnetism is related to the mathematical group U(1). Let's pass up the technical discussion of what "U(1)" stands for, but the symmetry is closely associated with charge conservation. The gauge group of the weak force, responsible for radioactive decays, is a group called SU(2). The electroweak force, which combines the two forces, has a symmetry group denoted, not surprisingly, as SU(2) × U(1).

The immense difference, however, between the development of electromagnetism in the 1860s and that of the electroweak theory in the 1970s, is that Maxwell started from experiment. The developers of the electroweak theory started from the symmetry principle itself and worked backwards.[7] Their theory led them to predict the existence of the electrically charged W boson, whose exchange generates weak processes, such as the beta decay of atomic nuclei, and the Z boson, a kind of "heavy photon." These have recently been discovered by two enormous teams of experimental physicists and engineers working at an accelerator in Geneva, Switzerland. Nonetheless, the electromagnetic and weak forces are in no sense completely unified; the so-called "Standard Model" of electroweak interactions involves a mixing of two independent forces, yes, but not on a very intimate level. Moreover, as was recently observed in *Scientific American*, "By the criterion of simplicity, the Standard Model does not seem to represent much progress over the ancient view of matter as made up of earth, air, fire and water, interacting through love and strife."[8]

There are a number of ways in which the Standard Model is incomplete. Many of its ingredients are simply added in (for example, the ratio of the electron and proton masses) rather than coming out of the theory. The origin of the masses of the fermions in this theory is not well understood. The reason why the photon should be massless and the W and Z bozons are not involves the important new concept of "symmetry breaking." Spontaneous symmetry breaking, in fact, seems to be invoked whenever somebody has a pet model that has far too much symmetry to fit the facts.

[7]On the one hand, this represents an enormous leap of the human imagination; on the other, its success seems to have driven physics away from being a science based on experimental facts and to have encouraged a lot of theoretical speculation.

[8]Twenty or more parameters, not accounted for by the theory, are needed and the fundamental constituents of matter number over thirty.

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Supersymmetry, grand unification itself (and thus superstring theories), involve the idea that the gauge symmetry can occur either "locally" or "globally." A global symmetry is a limited one. Rotate a sphere about some axis. It is still a sphere; its form is unchanged. Yet a global transformation has taken place. The position of *all* the points on its surface are changed by exactly the same angular rotation. In the same sense, the Special Theory of Relativity, wherein spacetime is "flat," exhibits a global symmetry; it deals only with observers moving with constant relative velocity to each other.

Contrast this with General Relativity, where the gravitational force is understood as an effect of the curvature of spacetime. Consider another sphere, which is not rotated as a whole but instead is stretched here and squeezed there, in such a way as to keep its spherical shape. The points on the surface of this sphere move independently of one another. A more stringent *local* symmetry results; it amounts to a symmetry under accelerations between neighboring points.

In General Relativity, whenever acceleration or gravitation is present, a gauge transformation involves a local symmetry operation. In fact, this local transformation, which varies from one place to the next, describes the origin of the gravitational field. In supersymmetric theories, repeated local gauge transformations move a particle from one point in spacetime to another—this is what suggests a link with the properties of spacetime and hence with the force of gravity.

Supersymmetry relates the bosons and fermions. This involves enlarging the Poincaré group, the group of symmetry operations, which are the tenants of Special Relativity and which tell us space is geometrically symmetrical. Enter (yes, you guessed it) the "super-Poincaré group." Spacetime is extended to "superspace" and involves the currently high-fashion idea of worlds of many dimensions. In fact, this is yet another old idea come around again, this time from the days when General Relativity was a-birthing. Supergravity, a particular form of supersymmetry theory involving gravity, in some versions has eleven spacetime dimensions, instead of the four that you and I can see (or imagine) surround us. In going in supergravity theories from eleven to four dimensions, the idea is that the extra seven dimensions will "curl up" and become so small that they cannot be seen. It is totally unclear what keeps the four remaining dimensions of ordinary space from not becoming just as highly curved as the invisible seven dimensions.

In the superspace, every particle has a "superpartner" of similar properties but with its quantum mechanical spin different by half a unit. This requires another population explosion in elementary particle physics (but one which has not yet been verified by experiment). This symmetry, each particle having a partner with the "other kind" of spin, also corresponds to the rotation of an imaginary arrow in superspace; a particle which we "see" originally to

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be a spin 2 graviton rotates into its supersymmetric partner, a gravitino with spin 3/2.

The supergravity theory (or theories) are simply supersymmetry theories which include gravitons (and gravitinos) in their cast of characters. The hope here is, or was, to find a model with a large enough cast that the theory can describe the exchange of all the bosons needed to mediate all the (four) fundamental forces, gravity included, between all the fermions needed to make up the matter of the universe.

There is, however, something of a philosophical problem here. The General Theory of Relativity implies that the gravitational force results from the curvature of space. In the quantum mechanical picture, however, two quarks would attract each other by exchanges of gravitons. But this must happen in just such a way that they each follow curved paths, in fact, the shortest possible curved paths, through Einstein's spacetime. Fine, insofar as microscopic physics goes! But for long-range macroscopic interactions—such as that of the Moon and the Earth—one must recover good old classical General Relativity. It is only at the quantum level that particles with adjacent values of spin are related by the local supersymmetry transformation. The Moon does have a spin (it rotates about its axis exactly once a month) but one has no idea whether it is a fermion or a boson!

There are other, more technical difficulties, and supergravity has lately fallen on hard times. The "warts" in the supergravity theories have compelled many physicists to seek cures in various extensions or modifications of the general supersymmetry idea. The current fad is superstring theory.

Strings are spatially extended objects, basically one-dimensional. Extended to a superspace, they are said by some to be "a radical departure" from conventional field theories, such as the electroweak theory. The latter describes the motions of point particles, objects without any dimensions. Despite the usefulness of point particles—already a concept employed by Newton—many physicists have long worried that talking about such objects is a bit unreal. For protons (as well as moons and falling kumquats) occupy a real, observable volume.

Superstring theory is still a supersymmetric theory. So, say its founders, if "supermatter" is discovered,[9] that will be just fine with them. Current superstring theories involve ten dimensions (nine spacelike and one of time), and also invoke the idea of extra dimensions' curling up. The fact that they have an even number of dimensions means that they can finesse some of the warts in the supergravity models. Herein lies what one of the theory's gurus, Michael Green of Queen Mary College,

[9]The UA1 experiment at CERN in Geneva has now found a few rare events, which *might* be interpreted as the creation of 40 GeV superpartners of quarks and antiquarks, each of which decays into an ordinary quark (or antiquark) and the superpartner of the photon.

[10]"Anomalies" in quantum field theories are undesirable features which involve the breakdown of one or another of the sacrosanct conservation laws.

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London, calls "one of the miracles" of the theory: "anomalies" cancel each other naturally.[10]

Is all well with this fledgling theory? Well, not quite. It has not yet predicted the mass of any real particle. Nor is it yet based on a geometrical principle. Einstein would probably react with a resounding Bronx cheer! "This is not," concedes Green, "very satisfying for a theory which includes gravity." In superstring theory, nongravitational forces are caused by the exchange of open-ended strings and gravitational forces by the exchange of closed loops of strings. The existence of the other three forces implies the existence of gravity. One "stunning" conclusion, drawn by Edward Witten of Princeton University, is a very simple relation between Newton's universal gravitational constant, the gauge coupling constant (which describes the fundamental strengths of the strong and electroweak forces) and the string tension (the only adjustable constant in the theory).

One byproduct of the attempts to unify nature's four forces has been hope for a deeper understanding of our cosmic origins. Yet this also poses very real problems. Electromagnetism, for example, acts *in* spacetime while gravity is a distortion *of* spacetime itself. Also, the force of gravity is the weakest force, yet when one considers large distances, such as from the Earth to the sun, it certainly becomes the only force that need be taken into account. Nonetheless, at *very* short distances, it appears that the strengths of the electroweak, strong, and gravitational forces all converge to the same value. That is, the strong becomes weaker and the weak becomes stronger.

It was in 1899 that Max Planck introduced his familiar constant, called the quantum of action. In a curious aside, he pointed out that his constant, when combined with the velocity of light and Newton's constant of gravitation, established an absolute system of units. What "*very* short distance" in the above discussion means, is Planck's unit of length, called a Planck length. This unit is 10^{-35} centimeters, some billions of billions times smaller than the size of the proton. It has long been argued that the Planck length sets the scale at which gravity might perhaps reveal itself in terms of gravitons interacting as strongly as gluons with the particles of matter.

The canonical view is that, in the beginning, at the time of the hot Big Bang[11], there was perfect symmetry among the forces of nature. Only later was this symmetry "broken apart." The idea of spontaneously broken symmetry is akin to a "phase transition," first described quantum mechanically by the Russian physicist Lev Landau in 1937. A liquid is a very homogeneous and isotropic thing. Its molecules don't stick together (at least, not for very long) and so, no matter how you view it, it will appear the same. That is, a liquid is rotationally and translationally symmetric. But, begin to cool the liquid and it will suddenly start to crystallize. Each

[11]In a quantum mechanical theory of gravity, even the very notion of time might disappear.

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growing crystal will be oriented along its own direction. Thus, the full rotational and translational symmetry of the liquid has disappeared. Moreover, when two crystals collide, they can stick together, albeit perhaps imperfectly. Crystal lattice defects will exist at the boundaries between domains which in general do not have the same orientation. The resulting frozen matter is much less symmetric than the mother liquor.

This brings us (perhaps not a moment too soon) to what is called the "inflationary scenario," proposed in 1980 to correct some faults of the simple Big Bang hypothesis. It is said that we live in a single domain of the universe—like a domain in a crystal. This domain (it used to be called a "bubble") has expanded so much ("inflated") that the domain walls are now far beyond the range of earthly telescopes. Inflation thus erases almost any information of what came before this state. The Universe might have been homogeneous at the time of the Big Bang, or not, but we can't know. We are, says the scenario, able only to see what things are like in the inside of our very own domain. It is, because of the inflation, extraordinarily homogeneous (on a sufficiently large scale).

To return to the idea pursued by the pursuers of unified theories: if the temperature of a system in a broken-symmetry state were raised, it would undergo a reverse phase transition. Just as a crystal of ice can melt back into a liquid, the initial symmetry of the universe can be restored. For the inflationary, Big Bang universe, the transition back to the symmetric state (where all four forces have equal strength) is believed to occur at (an enormous) temperature of 10^{27} degrees.[12] It's a bit like recovering the smile on the face of the Cheshire cat.

What does all this have to do with superstrings? Defects (that is, indications of symmetry breaking) can occur in one of three ways in a three-dimensional space. There are pointlike zero-dimensional defects which correspond to the hypothetical particles known as magnetic monopoles, the long sought magnetic analog to the electrically charged electron. Surfacelike defects —or domain walls—are two-dimensional defects. Strings are one-dimensional defects.

We have finally come to the point where we can discuss the notion of a shadow world. According to Green and Schwarz, one promising candidate superstring theory is based on the gauge group E(8) × E(8). Before the spontaneous symmetry breaking, as the doubling of the group structure implies, there are two equally like forms of matter. Then, the system "freezes"; the ten dimensions reduce to four.[13] But the symmetry may persist. If so, then there could be *two* worlds, each enclosed in its own domain, or bubble: an ordinary

[12]There is, however, no formal *proof* that the most symmetrical state of matter is always the one at the highest of temperatures!

[13]I never promised you an apple tree. Superstringers usually assume that whatever is true in their multidimensional spaces is also true in the visible four-dimensional spacetime. One wonders.

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world and a shadow world. The interactions of ordinary matter would be described by the first E(8), and those of shadow matter by the other E(8). If such a twofold universe exists, it might have involved "double bubble inflation" to get to that state. To see how this might have happened: at the beginning of inflation the universe would have been in a false vacuum for both worlds. Then, if a bubble forms for one of the two worlds (the shadow world, for example), it will inflate as the universe inflates. Possibly, a bubble for the ordinary world (which also inflates) could then form *inside* the shadow bubble. These two worlds, in this scenario, would interact with one another only through gravity.

If so, a whole slew of interesting questions arise. Tentative answers to these questions have recently been put forth by Edward W. (Rocky) Kolb and two colleagues at Fermilab and the University of Chicago. Does the shadow world exactly mirror the ordinary world (as, for example, antimatter mirrors matter)? Microscopically, a mirror shadow universe might involve the same kinds of particles with the same masses, and, macroscopically, both universes would have the 3° K background radiation temperatures. "Not so!" concludes this Chicago gang eventually, basing their argument on what we know about the formation of the lightest chemical elements following the Big Bang.[14]

Getting to that conclusion was apparently a lot of fun. If there were two identical worlds, they say, then on a microscopic level the two worlds wouldn't even feel each other's presence. They might even be sitting on top of one another without knowing it! On the scale of galaxies, however, this could be another matter. Depending on how galaxies form, one might find some galaxies that are mostly ordinary matter and others that are mostly shadow matter. Or, there could be galaxies that contain about equal amounts of the two.

Describing our solar neighborhood, the Gang of Three speculate that if the amount of shadow and ordinary matter are equal, then "the sun would be simultaneously a star and a shadow star, each burning its own kind of hydrogen to helium." They argue, however, that this is "impossible." But they do leave open the possibility of at least *one* shadow star, and that is the hypothesized sister of the sun, or Nemesis.[15] And, of course, the possibility of a shadow universe somewhere very far away is not ruled out. This would have resulted from the formation of two separate inflating bubbles (i.e., not causally connected) at the time of "freezeout."

Along the way, Kolb and his colleagues point out that, if the disk of our galaxy were to contain both matter and shadow matter, it *would* explain one of the dark matter problems—that the gravitational mass of the disk (as in-

[14]Astrophysical evidence is today widely used to confirm (or refute) ideas in elementary particle physics, which in the meantime is trying to propose ideas to understand the large-scale and early-time structure of the universe.

[15]Nemesis is sometimes called the "death star" because it has been suggested that such a star could periodically hurl lethal comets at the Earth, leading to mass extinctions.

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ferred from its dynamics) seems to be about twice that of the matter we can see or detect in the form of stars, neutron stars, gas, dust, etc.

Indeed, the issue of whether the visible mass of the universe is all there is, has long been of interest to astrophysicists. The average density of the visible universe has been long believed to be a bit shy of the "critical density" needed to bring the universe's expansion to a slithering halt, some far-off day. Astrophysicists have therefore been trying to squeeze a little bit more matter in, somehow. Why do they bother? The reasons must border on the philosophical or religious. One can fathom a closed universe and perhaps even eventually understand the initial conditions which led to the here-and-now. An endlessly expanding universe, however, is far harder for many people to swallow.

Incidentally, the problem of the missing mass may not even be soluble after all. Recent observations (i.e., not speculations) by J. Anthony Tyson and his colleagues at the AT&T Bell Laboratories and the Kitt Peak National Observatory indicate that visible galaxies form a mere *three percent* of the critical density! They use what is essentially a new technique for getting at "the missing mass problem," based on a gravitational lens effect. More work is needed, of course. But it does lead to the thought that astrophysicists may have been chasing their tails in a theoretical search for what experimentally isn't there at all.

To get back to the guys from Chicago, the major effect of shadow matter, they conclude, would be in the early universe. Suppose, they say, the microphysics of the two kinds of worlds is *not* exactly the same. For example, the world might not be described by E(8) × E(8), but by the gauge group E(8) × E(6). Perhaps it is the E(6) subgroup which breaks down to the symmetry groups of the strong and electroweak forces *we* know, but the E(8) subgroup would, if anything, describe a shadow world which has forces quite different from ours.

There is also, they admit, the possibility that even this different primordial shadow matter would have long since disappeared by annihilating with shadow antimatter, or even by decaying to ordinary matter. If not, however, and at least one stable shadow particle with mass survives, that relic can, or could, seriously affect the gravitational dynamics of the universe we observe.

There are other possible ways in which string theories can affect the universe we know. There is speculation by Alexander Vilenkin of Tufts University (and others) that "cosmic strings" may have been the "seeds" on which galaxies and galaxy clusters were formed long ago. No one expects to find more than a few of these superheavy objects in the universe at the present time. (But the good news is that, if there are some, perhaps we can see them.) A cosmic string is a macroscopic object, which is analogous to the flux lines in superconductors. The width of these exotic objects is so small that, again, the only significant interactions of cosmic strings in the present universe would be gravitational.

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The idea goes like this. Much like line defects in a crystal, strings formed a network of defects across the whole of space after, say, the universe went through a period of inflation. Thus, they would continue to stretch as the universe expanded further. Suppose now that a big closed loop of string crossed over upon itself. It could then break apart into smaller loops of string. The gravitational field of these strings would cause matter to accrete around them. What is perhaps more crucial is that big loops tend to shed little loops, and this seems to be a way to see how galactic clusters can fractionate into "smaller" galaxies. The fact that matter in the universe seems to group itself into bigger and smaller units has been a long-standing unsolved puzzle. A further argument for strings as seeds for galaxies is that some of the loops would have gathered together enough mass to allow them to collapse to a black hole. And most galaxies (including our own) do seem to have black holes at their centers!

To do all that, cosmic strings would have be very massive. To imagine this, Craig Hogan of the California Institute of Technology postulates a small closed loop, about as big as you or I. (The mass of such an object is so big that an object orbiting around this loop at a distance of a few meters would have a velocity of 300 kilometers per second. If an infinitely long stationary *straight* string were passing through the room you're sitting in, you wouldn't feel a thing. Suppose on the other hand, you inadvertently walked through the *loop* of string. You would find that the parts of your body which had passed on opposite sides of the string would end up moving toward each other at very high speed (about a third of the velocity required to escape from the earth). The string leaves its "wake."

A similar wake, it is conjectured, would be formed by strings in the cosmic background radiation, and this provides a possible way to search for these cosmic strings. Strings which are not perfectly straight would tend to vibrate transversely at nearly the speed of light. The vibrating string would lead to a small temperature difference between the leading and trailing sides of the string. Perhaps such a distinctive anisotropy in the 3°K background radiation could be detected.

You've now seen something of where strings and superstrings have led us. Where we're going, however, is by no means clear. It may be wise to bear in mind, as Stephen Hawking remarked upon assuming the chair once held by Newton at Cambridge, that a fully unified field theory of matter will, by its nature, only allow us to make statistical predictions. There is no *unique* history that one can write down for the universe. There is only a *probability* for this or that history as long as one is only concerned with what happens at the very short Planck scale of distance.

Let us pause a moment here and examine this argument. Suppose one believes (as do most physicists) in the Heisenberg Uncertainty Principle, which

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sets the limits of measurement in the subatomic world. For example, one can never know exactly both a particle's position and its velocity.

Because of this, one begins to wonder if grand unification schemes aren't taking on something they oughtn't. The ultimate symmetry of matter is said to show up on the scale of Planck's length, or 10^{-35} centimeters. How can physics at such a small length ever be tested? To probe length scales this tiny, one would need a particle accelerator the size of the galaxy! So, caution about such an enormous extrapolation is clearly warranted. Indeed, as Hawking rightfully pointed out to me, "no one knows what it means to talk about an uncertainty principle for the universe."

This is a transcendental but relevant issue. It was no doubt Robert Dicke of Princeton University who first suggested (as a joke?) that it makes no sense to speak about a universe unless that universe contains intelligent beings. But it took 3,000 million years of biological evolution to generate the only sentient beings we have ever known (ourselves, and maybe the whales). This involved the development of amino acids, muscles, brains, and, finally, more or less social behavior. But, according to General Relativity, a universe cannot provide billions of years of time unless it has billions of light years of extent. If one is to accept this view, it is not the universe which governs man, but man who governs the universe. If one accepts such a view, a shadow world would have no existence unless it is observed by shadow beings.

This idea was later expanded upon by Brandon Carter of the Paris Observatory, in what he now says he unfortunately called "the anthropic principle." Simply, his doctrine is that our observations of the universe are biased because they are made by us. Does mankind seek a unified field theory of matter simply because we can envision no other alternative? This is yet another Humpty-Dumpty question without an answer. ■

BIBLIOGRAPHY

Alice in Puzzle-Land, A Carrollian Tale for Children Under 80, Raymond M. Smullyan, Wm. Morrow & Co. Inc., N.Y., 1982.

"Unification of Forces and Particles in Superstring Theories," Michael B. Green, *Nature,* April 4, 1985.

"The Shadow World of Superstring Theories," Edward W. Kolb, David Seckel and Michael S. Turner, *Nature,* April 4, 1985.

"Cosmic Strings and Galaxies," Craig Hogan, *Nature,* August 2, 1984.

"Galaxy Mass Distribution from Gravitational Light Deflection," J.A. Tyson et. al., *Astrophysical Journal,* June 15, 1985.

● Aerial flight is one of that class of problems with which men will never be able to cope.

Simon Newcomb, 1903

Submitted by G. Harry Stine

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"Good morning, John," the Marilyn Monroe stamp greeted him.

Bathrobed and slippered, John Tukolo yawned and squinted down at the first day cover, the album open across his lap. Had the picture changed? She still held the same pose, her back to him, smiling up across a bare shoulder. He could have sworn the smile had brightened since the envelope had arrived on Friday. No, only his imagination, after another sleepless night. He frowned at his foolishness and again ran the nailfile-shaped recorder over the stamp's ridged surface.

"Good morning, John," Marilyn repeated. Her smile remained the same, though the recording sounded tinnier.

Angry for having wasted another of the talking stamp's ten to fifteen guaranteed uses, he wiped a cloth across the glassine mount to reduce static electric-

Some aspects of the impact of technological change don't show up in large-scale economic analyses.

George Guthridge

PHILATELIST

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ity which could damage the stamp's sensitive surface, then tucked the envelope back in its slot. He could ill afford to use up the recording. He could ill afford the stamp in the first place.

Having the greeting personalized had been vain, he knew; certainly it would reduce the value. Most collectors paid for generalized, provocative greetings: *I love it when you scratch my back*. But it was the last of the set—Gable, Grable, Harlow, Valentino—and he had wanted the stamp to be *his*.

He put the album away amid the others, and sighed. First day covers, plate blocks, sheets, singles; he collected them all. The rest of the tiny house was a shambles—the village's unmarried women had long ago stopped coming by and tidying up in the dim hope of divesting him of his bachelorhood—but the albums stood proud and fat in their red covers and gold bindings, always in perfect order, always dusted. He refused to specialize by country or topic. It frustrated him; but like a child in a toystore, he wanted to own *everything:* not out of greed, but because stamps filled him with such wonder.

That wonder would end when his job gave out.

And when stamps were no longer printed.

Which would be soon, most likely.

He shaved, brushed his teeth, dressed, pulled on his parka and boots, and went outside. The wind howled; snowswirls skittered out of the Arctic darkness and into the glow of his flashlight. He made his way over the drifts to the post office, a turquoise trailer that had been shipped from Anchorage on the North Star barge back in the '70s. Vivian Chugash, the postmistress and his boss, was putting up the flag. It snapped in the wind as he waved a mittened hand and went inside.

He switched on the printer and watched it type out incoming letters for the few residents who still lacked personal computers. Then he rubber-stamped the letters postage due and placed them in the postal boxes. Soon, he knew, everyone would have a computer; that was the case in most of the country. Postal jobs were dying like flies during an Autumn freeze.

He settled back and waited for the percolating coffee pot to finish. His job was over, essentially, for the remainder of the day. It was Monday; traditional mail, such as it was, would not arrive until Friday. Ironically, modern changes had made the village even more remote. Until the turn of the decade, mail planes had braved the Arctic blizzards almost daily, sometimes twice a day, setting down on the tiny airstrip one wheel at a time as the craft glided sideways on the crosswinds.

No longer subsidized for carrying mail, the airlines now had reduced passenger service to once a week, except for emergencies. Nor did people queue up inside the post office each afternoon, as in the old days, smiling and sharing gossip or news about hunting while he and Vivian sorted letters. Except for packages, the mail now consisted mainly of advertisements.

The few people who sent traditional letters often did so as an excuse to purchase a newly designed stamp. In the late '80s, threatened by computers, the U.S. Postal Service had tried to survive in a new way, as radio had done when

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confronted with television. Congress allowed businesses to buy the right to print their own stamps, and ad-men had jumped at the opportunity. Then the right had been extended to businesses specializing in stamps for individuals. Stamp collecting's investment potential suffered, since nearly all stamps were limited editions, but the public was delighted. Stamps replaced license plates as personalized status symbols. Family photo, pop-art, pop-*up*, 3-D, and neon stamps abounded. Scratch-and-sniff stamps proved popular. Some fool even designed a hypnotic stamp; press the thing, and its inspinning design whirled. Subsequent letter reading could be difficult; the invention, ruled dangerous, was finally banned.

Gradually the personalized-stamp fad faded as prices spiraled. Computers linked by telephone were less costly and more efficient. Besides, as some spoilsport psychologists and altruists insisted, the stamp practice was vain and financially wasteful. The pure-protein wafer, invented in 1989, had greatly reduced world hunger, but people *were* still starving. Money could be better spent.

Here in the village PO, all that remained of the postal service's campaign was a sign above the suggestion box: MAKE A SUGGESTION; SAVE A JOB. Originally the box had been in the foyer; people had used it for cigarette butts and gum. Now it was mounted on the wall next to his desk, the sign meant for him. His job.

Vivian entered and, leaning with her elbow against the box, slapped snow from her ski pants. She looked tired and haggard as she removed her white fur cap and shook her hair free. "A special delivery letter arrived for you," she said. "I put it in your box." There was a chill in her voice, as if she'd brought the cold in with her. He glanced up; she looked away, then walked over to the coat rack to hang up her things. She stood there, too long it seemed, her back to him.

He peeked in the box. There, folded in half and stamped with the postal meter, lay a pink computer printout. He didn't need to read it; good news never wore pink. How ironic; the Postal Service was using its own executioner's axe to chop him off at the knees.

"They want me to finish out the day?"

"The week." Her voice sounded distant, colder still. "Take the day off, John. I'll cover for you."

"It's okay. I'll stay."

"No, John, please! I—" He turned, and she was gazing toward the ceiling, her eyes moist. "I'm not handling this very well," she said. "Damn!" She exhaled loudly and stamped her foot.

He went over and put his hands on her arms. "Easy, Vi. It's probably for the best. It's about time I oiled my shotgun and started bird-hunting again."

"If Harold was back on his feet and we didn't need the money, I'd quit in an instant. Then you could take my place . . . for as long as it lasts."

"I know that, Vi." He gave her arms an affectionate squeeze. "And I appreciate it, believe me. But it'll be okay. We'll all be okay. I'll come back tomorrow. We can talk then, or something."

"Sure, John. You do that. That's a good idea."

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He pulled on his things and headed home. Dawn lay gray against the treeless horizon. The temperature had dropped since he'd been out last. It was twenty, thirty below with the wind chill. It felt a lot colder.

He cooked breakfast and, the paper plate balanced on his knees, watched TV as he ate. News, a soap opera, a PBS show broadcasting weather conditions for pilots; he switched off the set. Cable shows, bounced off the satellite and picked up by the village's dish, didn't come on until noon. The hookup cost him a small fortune; it would have to be the first expenditure to go. *Then,* he decided, he'd write the Dear John/From John letters to the three stamp companies with which he dealt.

He lifted down a British Commonwealth album and opened it at random. Pitcairn Island. *How fitting,* he thought. The island, settled by *Bounty* mutineers and resettled in 1860 after some of the descendents had tried and disliked life on Norfolk Island, was now uninhabited. Shipping lane changes and New Zealand's refusal to build an airport in Pitcairn's tiny Auté Valley had reduced the population to 45 by 1983 and a dozen by 1990. Only seabirds and driftwood now landed where Fletcher Christian had stepped ashore.

John slouched back in the overstuffed and closed his eyes. He felt wearied, as though he had been walking for miles against an Arctic wind. He imagined ships and planes filled with mailbags crisscrossing the seas while he huddled sullen and hopeless in the village PO, surrounded by darkness and buffeted by wind and change. He had never been out of the village much, except to Anchorage for postal meetings a couple times a year; and once, for six months, he had tried and failed to cope with California. But through stamps he had traveled greatly; had *lived,* vicariously, everywhere.

His body suddenly ached with a dull, unquiet anger. He shut the album and tried to relax. His mind drifted. . . .

The jagged cape called The Edge arched above the lower cliff's banyan trees and rose-apple thickets. A mild surf sluiced past St. Paul's Rock, carrying his inboard-driven launch toward the half-dozen boat houses. Squattish, they uncannily reminded him of his home back in the Arctic, so many miles away. A sign hung from a timbered lintel in front of the largest, the launch's shelter: Welcome to Pitcairn. A gray-haired woman holding a carpetbag in her arms as if it were a baby in swaddling stood beside two tawny-skinned boys. The boys gazed at the ground as he stepped ashore onto the planks of the boat slip. The woman gazed toward him, perhaps through him, with hard eyes. Her hands, arthritic-knuckled, tightened on the bag. No tourist, he; a government agent, assigned to remove the last of the island's tenants. He opened his mouth to say something, but could find nothing appropriate. A breeze had come up, and he noticed that above him the leaves of the banyans slowly, silently waved. They would own this island soon, they and the other foliage, he told himself sadly; would stand sentinel over a sea undisturbed by boats or boys out gathering crabs and snapper.

He awakened with a start. For an instant the vision—of a sea and tropical trees and an island hulked beneath a

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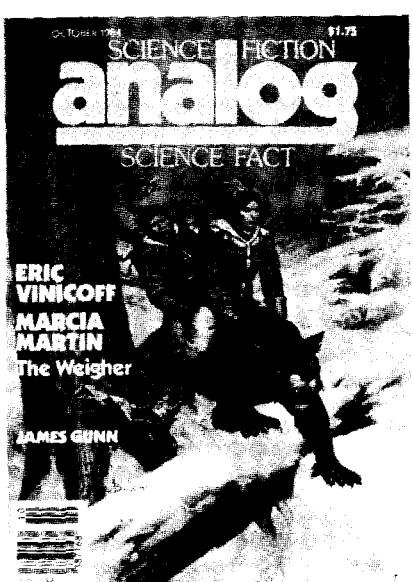

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cloudy sky while a launch motored away for the last time—shimmered before him as if imprinted on his retinas. Then he blinked and lifted the stamp album to put it away.

And stopped, holding the heavy book.

Shadow box! Excitement pulsed within him as he imagined an abnormally thick stamp that depicted Pitcairn as he had seen it in his daydream. He had built shadow boxes as a child, delighting in the panorama of scenic pictures combined with such foreground elements as sand and seashells. How entrancing, if that effect were reproduced on letters from exotic lands! Stamp buying was certain to increase. Perhaps they'd even give him his job back!

He went to the window and gazed out, lost in thought. Snow was mounded to the sill, and ice laced the frame; he had the odd feeling he was staring through a frosty wreath. Beyond, hunched before the Arctic's reddish sun, two parka-clad hunters on snowmobiles crossed the horizon. That scene, too, he told himself, could be captured in a shadow box! . . . and then his heart sank.

What could subsistence hunters such as those out there in that cold, so intent on bringing home a ribbon seal or auklet or eider duck for dinner, want with a window-dressed stamp? The shadow box idea would be just another sidestep and pirouette in the face of onrushing change. He squinted toward the hunters as they crested the horizon, and suddenly he could feel himself jouncing across the tundra, the cold against his cheeks, the engine thrumming through his loins. He felt one with the hunters, as he had felt one with the old lady on Pitcairn. He knew their exhilaration, and her pain.

Abruptly he understood. He turned around sharply, staring open-mouthed toward his collection, and for the first time in his life he realized what the albums contained. He stumbled toward his roll-top desk and rifled through the drawers. He'd pen a note for the suggestion box. On official U.S. letterhead memo paper. Properly sealed. Traditionally stamped.

It was January, and darkling cold lay slabbed across the village. He smiled despite the chill as he trudged against the wind to the post office. Snowmobiles and three-wheeled all-terrain vehicles were parked outside the door. Inside, he knew, people were waiting for Vivian to open the postal shipment she had taken off the plane and brought over from the runway. The shipment wasn't letters or regular packages.

It was stamps. *His* idea; and the other villagers wanted to make sure they purchased and mailed some of the new design. Demand for the stamps was so great throughout the country that the postal service found itself short; for the time being, supplies were limited.

Someone cheered as he entered. Everyone grinned, and he grinned in return. Soon Vivian would open the metal partition, and the pure-protein stamps would go on sale. SEND STAMPS; FEED A FRIEND, a sign proclaimed from the foyer's far wall. The program wouldn't solve world hunger; it wasn't meant to. But it helped people care; helped them mail hope. Handfuls of the fat stamps stuffed into

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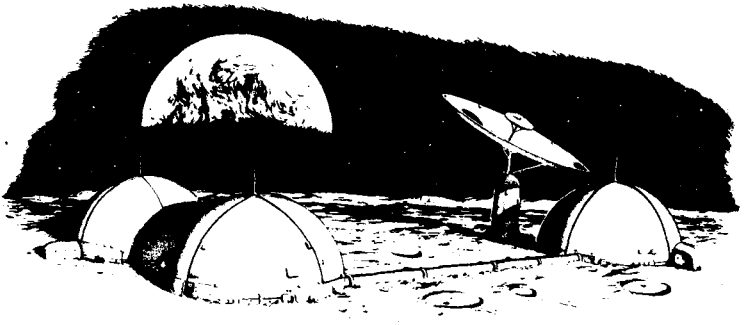
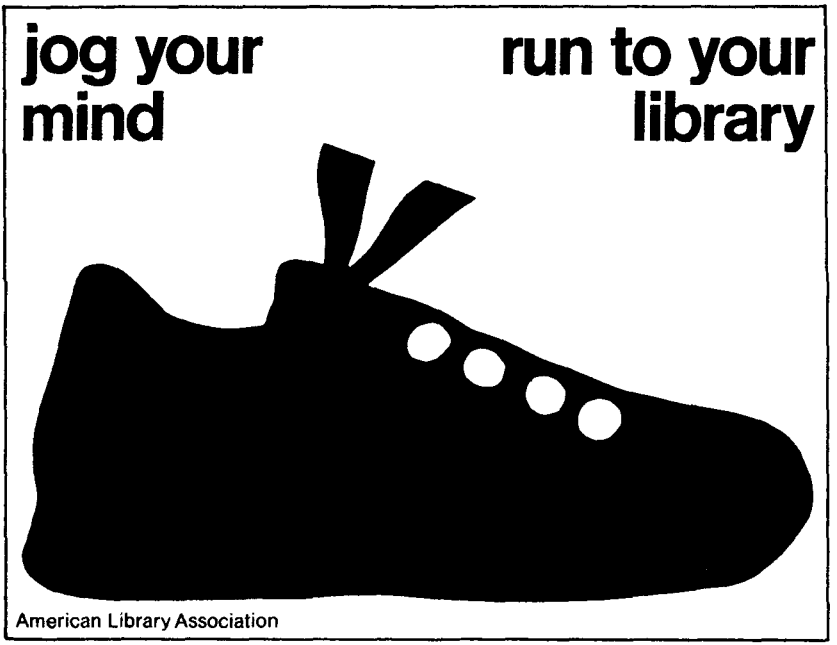
manila envelopes could help feed a family in a disadvantaged country, when times were lean.

Much more than that, though, it brought strangers together. And that, he had realized, was what collecting —stamps, coins, art, books— was all about. Not a matter of possession. Or of place.

Of people. ■





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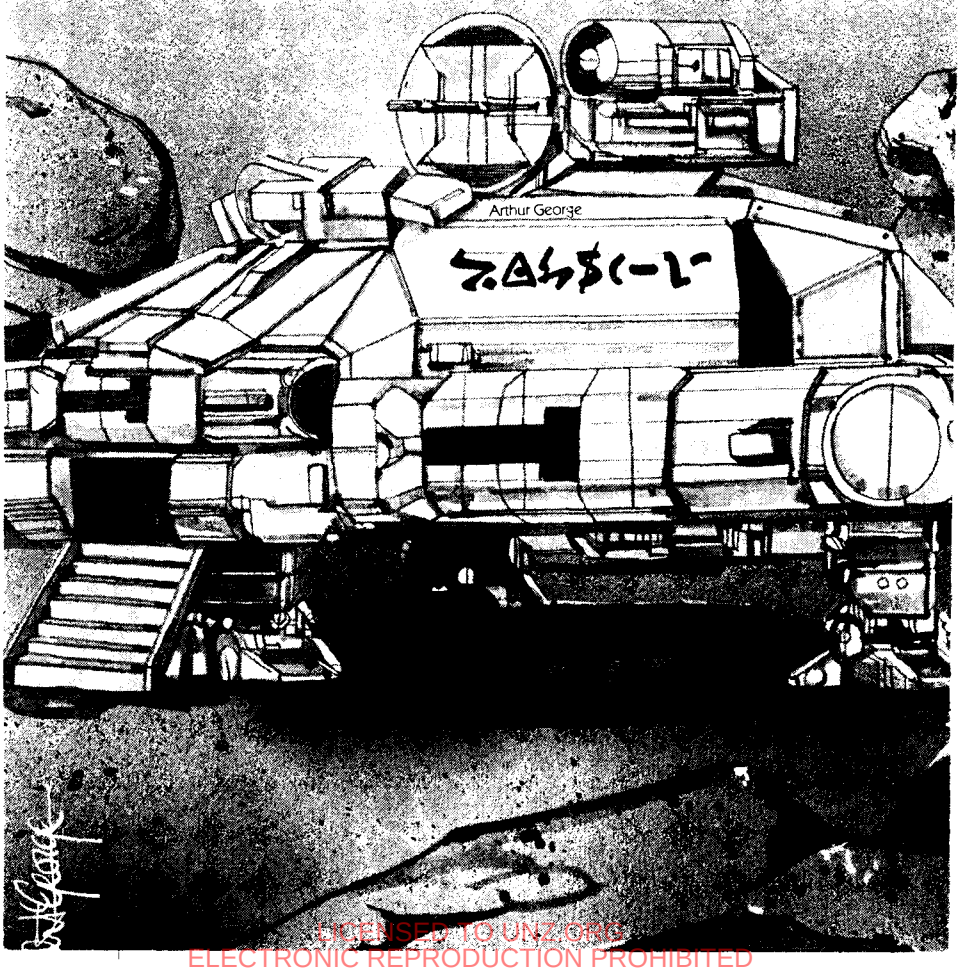
"Primitive" is an interesting concept—and in using it, it's advisable to remember that experience and talent are two quite different things.

GODKILLER

P.M. Fergusson



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Gamebringer crouched in terror behind the screen of brush. The shaft of his spear creaked faintly, its flint tip shivering, reflecting the pressure of his grip. Flintchipper, who crouched beside him, was no calmer. Gamebringer could smell the acrid, unpleasant odor of his fear and feel the tremors that ran through his spindly body.

The object that caused their fear drifted in shining beauty out of the sun. A great silvery oval riding a cushion of flame. Slowly, it settled toward the broad, grass and tree covered bench that formed the division between the river canyon and the bordering ridges.

As the thing neared the ground, it extended three silvery legs, each longer than a man is tall and as thick as his waist. It roared in flaming anger, and the watchers cowered before its wrath. The short, sere stubble on the cliff edge shriveled and flared beneath it.

Gamebringer and Flintchipper hunched even deeper in their fear as the heat washed briefly over them. Then there was silence. For a moment, even the normally brash wind seemed to fear to speak. Curiosity slowly overcame fear, and, after several minutes of unnatural stillness, they peeked cautiously through the screen of brush. The harsh odor from the still smoldering grass was mixed with a smell they couldn't identify. The smell of friction-blasted metal. It snapped savagely at their flared nostrils, forcing them to fight the overpowering urge to sneeze.

For long minutes, nothing happened. Then, without the slightest twitch or warning, the silver beast emitted a whirring whine and opened its mouth. It rested its jaw on the ground, exposing black corrugations. Then silence again—and utter lack of motion.

Within the mighty silver beast, the pilot who had landed the scout ship was as interested in Gamebringer and Flintchipper as the crouched watchers were in the ship. She hunched over her view screens and carefully adjusted the controls to sharpen the focus.

"What are they doing now, Tasa?" her partner asked as he entered the bridge of the scout ship carrying two steaming mugs of klaht. Its spicy aroma made her mouth water.

"About what you'd expect, Shen. Hiding." She stretched, ran a hand over her dark hair and gestured to the infrared enhanced view screens. The hunched figures of Gamebringer and Flintchipper stood out in bright relief.

She walked to a table spread with language maps, cultural statistics printouts, and other anthropological debris. He added to the disarray by pushing them to one side and settting down one of the cups. The other cup he handed to his partner.

"We must have scared the holy shit out of them." His bass laughter rumbled, and his unruly blond curls danced in time to the laughter. He handed her the cup and, in response to a raised eyebrow from his partner, changed the subject. "Here, have some klaht and relax. That was a fair to middling landing, lady. Couldn't have done better myself."

"Thanks for the klaht and the compliment," Tasa told him as she took a sip, then she glanced up at her partner again and added, "No doubt you're right about scaring them, but they'll get over it in a few days and we can make

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contact." She grinned wryly and went on, "I wish you'd be less explicit in your language though."

"Sorry, Tasa. I'm just not used to working with a partner, let alone a woman partner. You'll have to make some allowances for my iconoclastic scatologies." He gave her a boyish grin—and incongruous expression on a face composed mostly of harsh plains and angles—and added, "But I'll try to improve."

Tasa shook her head, making the long waves of her dark hair shimmer and ridding herself of the last of the tension built up by the landing. "I doubt it, unless you mean you'll try to improve the vividness of your remarks." She shook her head again and laughed. "You are an utterly incorrigible male chauvinist, Shen."

"True, but it's one of my minor virtues," he replied unrepentently.

Tasa scowled in mock exasperation, and they resumed watching the crouched figures on the screen.

"I wonder how they'll react to us," Shen remarked. "It can't be every day they have a starship land in their back yard."

Tasa shrugged. "I can't foresee any major trouble. Really primitive tribes, like these, generally investigate strangers rather than blindly attack. It's a survival trait. Strangers might be potential wife sources, or have valuable items to trade. In fact, this place looks like an anthropologist's dream."

"I think you're right about not having any difficulties conducting a cultural study, Tasa. About the only problem we may face is being deified. They'll probably think we're gods."

Tasa studied the infrared image of the watchers. "I wonder what they're thinking now?"

"Way only knows, Tasa. They're probably too scared to think much of anything at the moment."

Contrary to Shen's opinion, Gamebringer and Flintchipper were thinking fast and hard.

Silence seemed wisest, so conversation was by sign.

"We must leave here—quickly. Tribefather must know what we have seen as soon as possible," Gamebringer signaled emphatically.

Flintchipper nodded and pointed to a relatively protected route that led to a heavy copse of trees. It took them closer to the silver beast, but any other route left them too exposed. Gamebringer dipped his head in agreement and began to move, with the utmost care, toward the trees.

The beast gave no notice of him.

When he reached the trees, he gestured for Flintchipper to follow. Within a few moments, they were both cresting the ridge that overlooked their former hiding place.

"I wonder if it's really alive?" Gamebringer's harsh voice was blurred by looking over his shoulder. "Or is it a something like the great rock that crashed to earth in Tribefather's tales?"

"I would as soon leave the finding out to someone else!" was Flintchipper's typically cautious response.

"Flintchipper, you have not one speck of adventure in your soul," Gamebringer chuckled. "Perhaps that silver beast is good to eat once it has been shelled like a river crab. We could feed the tribe

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for longer than with a great tusk kill if it is."

"I'll stay with what I know, Gamebringer." Flintchipper's voice was a trifle surly in response to Gamebringer's jibe. "I'll make the spears and knives, and you use them. I'll live longer that way."

Gamebringer shrugged goodnaturedly and gave his friend a cheerful slap on the back. "Most likely—but I'm still curious about that thing."

"Let's get back to camp first. Then Tribefather can decide what to do about your curiosity. He may even decide to feed you to it if you irritate him."

"I'd make tough eating," Gamebringer laughed and swung off toward camp, his spear slung jauntily over his shoulder.

Within the ship, Gamebringer's and Flintchipper's departure had been carefully observed. "Well, they've left," Tasa commented dryly and sipped her klaht. "I guess they weren't too scared to think, after all. You notice, they slipped out over the route that offered the best possible concealment—even though it brought them in closer to us."

Shen ignored the hint of sarcasm. "Never said they were dumb. But, either they're a lot braver than I thought, or the nocturnal fauna on this world is a lot more frightening than we are. I'd bet a lot that the latter is closer to the truth."

"You're probably right about the conditions around here after sunset," Tasa agreed. "I'm sure not about to take a moonlight stroll to confirm it, either. I'll wager there are some very large and nasty predators running loose on a world this primitive."

Shen grinned at her. "Five credits will get you ten that the nastiest is still the one that walks on two legs."

"No takers on that one, Shen," Tasa laughed.

At the same time Tasa was refusing Shen's bet, Gamebringer and Flintchipper were preparing to make their report to Tribefather. Unlike the rest of the tribe, who had greeted them at the perimeter of the campsite with a confused babble of questions, Tribefather awaited their report at his place of official judgement within the shallow cave that gave security and shelter to their camp. Blazemaker led them in, then seated himself beside Tribefather.

Tribefather accepted the game they had brought with them, handed it to a waiting woman, and greeted them with official formality before he touched on the subject of the shining thing from the sky. When the preliminaries were concluded, he stated with properly formal phrases, "We saw a silver thing fall from the sky. Did you see it?"

"Yes, Tribefather. We saw it," Gamebringer responded with equal propriety. He was careful to choose properly formal word forms for this official reporting. "It landed on the canyon rim near where Flintchipper and I were hunting."

Tribe father nodded. "Was it a beast? Or a thing, such as the flaming rock I have told you about?"

Gamebringer shrugged. "I do not know, Tribefather. It has legs, like a beast. It has a mouth, like a beast. But, it smells like no beast I have ever known, nor does it make beast-like sounds. It sits unmoving where it landed." Gamebringer shrugged again

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and concluded, "I do not think it is a beast." He paused but couldn't resist adding, "But I'd like to find out." Tribefather's expression made him wish he had left the last unsaid.

Tribefather stared at Gamebringer with stern reproof. As Gamebringer began to wilt noticeably beneath Tribefather's gaze, the patriarch chided gently, "I will consider you when I decide who will observe the thing further. But this is a matter for caution and judgement —not action and . . . ummm . . . enthusiasm."

Gamebringer could feel the smiles of the men behind him, including his brother, Plantfinder, even though he dared not turn to look. The knowledge irked him. It was a hunter's place to be bold. His quarry didn't sit and wait to be found and uprooted like Plantfinder's and Flintchipper's. His quarry was always on the move and frequently fought back. Gamebringer bit back a sharp reply; it would only bring Tribefather's displeasure down upon him—and give the watchers more to smile and snicker about. Gamebringer knew how to wait; his time would come.

Tribefather nodded. He noted and approved Gamebringer's restraint. The young rowdy is finally learning, he thought. If he continues to grow, he may yet gain the judgement and leadership abilities to someday replace me. Aloud, he remarked, "I will think on this subject tonight and decide. In the morning I will give you my decision." He stood, signaling the end of the formal meeting. "Now I think the game you brought should be enjoyed." He sniffed and smiled at the aromas drifting into the cave from the cook fires. "My nose tells me the women have been well occupied while we conferred."

The following morning Tasa stopped at the door of the bridge, leaned against the frame, stifled a yawn, took a sip of klaht, and nodded at Shen.

He gave her a smile and announced, "We have observers again. Two up on the ridge, and two in that stand of hardwood on the cliff edge." He pointed to the appropriate screens and walked over to an analyzer. He scanned the readouts rolling across its screen and said, "Two of them are the same boys who watched us land yesterday—but they've split up. One on the ridge, one in the trees. The other two are new. All males, though."

"Really, Shen. You didn't actually expect female scouts in a primitive society, did you?" Tasa asked with a distinct tinge of amused sarcasm. "They're much too valuable to risk. Who'd raise the children and do the heavy work if they got killed?"

Shen gave her a raspberry, and she stuck out her tongue at him in reply before stepping to the screen controls.

Tasa turned up the magnification on the screen covering the copse of trees. "That big boy in the trees was here yesterday. Must be one of their leading hunters. Looks more curious than scared." She sipped thoughtfully at her klaht for a few moments then added, "The one with him looks like he may be a relation. Possibly a brother."

"Probably is, Tasa. I doubt that there are more than thirty adults in this group; they may even be one family."

"Wouldn't be unusual," she agreed.

Shen began opening lockers. "Let's give them something to observe, shall we? We can do some preliminary survey

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measurement, get some plant and soil samples, and see how they react." He paused, then added with a slightly grim smile, "I'll also remote the defenses to our belt controls—just in case."

"They're probably too scared to do anything hostile, Shen."

Shen looked at her. "Tasa, when a man, or an animal, is afraid, he is at his most dangerous. Never forget that fact. And be sure you're wearing your sidearms when we go out."

"You've got a point," Tasa admitted. "I wouldn't want to try wrestling either of those boys. They look *strong*." Tasa removed her utility belt from the locker, snapped her pistol to it and slung it over her shoulder. "Let me finish my klaht, make a head call, and I'll be right with you."

Gamebringer and his brother crouched low as Shen walked down the ramp. A man strolling casually from inside something they had half believed to be a living beast was beyond understanding. People did not normally walk out of beasts once they had gotten inside.

When Tasa followed a few moments later, Gamebringer whispered to his brother, "It's a thing. A flying cave."

Shock gave way to fascination as Shen and Tasa began setting up their instruments and collecting samples.

Plantfinder's mind was churning. He whispered his thoughts to Gamebringer as fast as they became coherent. "But how can a huge silver boulder fly? And what are those strange people? Are they gods? Evil spirits? What are they doing?"

"How should I know?" Gamebringer hissed snappishly. "I've never seen gods before. Or demons either, for that matter." He shifted his weight and felt the dampness of the leaves squeeze between his toes as he dug them into the mulch for better traction if he should need it. The female was coming toward their hiding place.

He watched as she set up a strange gleaming thing on three spindly legs. Gamebringer couldn't know that Tasa was carefully avoiding looking at the place where they crouched, but some primitive sense told him that she was aware of them. He found her oddly attractive—in an alien way. She was too slender for much work, and her hips were too narrow to be a good child producer. But her saffron complexion and regular features were attractive, nonetheless.

Any further thoughts were cut off by the actions of a fifth, and undetected, watcher. Old Fang-face found Tasa attractive, too. But for different reasons. He had been spectacularly unsuccessful in his night's hunting. The pain in his injured hind leg, a gift of the mating battles, had slowed him. Plant eaters had skipped agilely out of reach, then stopped and insolently observed his limping retreats. He was in a foul mood. This ape thing wouldn't be able to avoid him. It didn't even carry one of the sticks that stabbed. This time, he would not be left hungry and frustrated.

To old Fang-face, thought was action The prey-paralyzing roar of his charge was only fractionally preceded by twitch of tail tip and muzzle.

Old Fang-face charged. Tasa screamed. Shen drew and fired. Gamebringer rose and threw. The bolt of fire from Shen's blaster and the flint head of Gamebringer's spear tore into Old Fang-face almost simultaneously. He

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collapsed, thrashing in his death agony, less than a fifty centimeters from Tasa's feet.

Tasa swallowed twice—hard—and promptly fainted.

"Weak!" Gamebringer muttered. Any woman of his tribe would have been getting out her skinning knife—not falling unconscious. The Fang-face hadn't even touched her! Gamebringer's analysis was deferred by the rapid approach of Shen, and the growing tension of Plantfinder behind him.

Gamebringer noted that the oncoming Shen still had the thing that hurled fire in his hand. He growled at his brother, "Relax. He could kill you before you could throw. Besides, he's worried about the woman, not us. Unless we act as if we are going to attack him. If he wants to kill us, he can, and there's not much we can do about it."

Plantfinder did relax somewhat. Even so, he made certain that Gamebringer was between himself and the approaching Shen. "What now, brother?" he asked in a low voice.

"We wait and see what he does. Perhaps he will ignore us. Perhaps he will try to talk. We shall see." Gamebringer considered the possibilities and added, "I think it would not be a bad thing to have a god as a friend. We shall wait."

Tasa was already struggling to her feet when Shen reached her. "Sorry, Shen. I didn't see that thing until it was too close for me to do anything. Guess I panicked."

"Yeah, well, we all have our lapses." He pointed at the shaft of the spear projecting from the spotted hide. Blood ran from the wound across the tan and black fur. "At least, we know our observers aren't actively hostile. And, they *are* strong—not to mention fast. That spear hit the cat before my shot."

Tasa looked from the spear to the impassive Gamebringer. "Lord of the Way, what a throw! He hit that cat dead center, from twenty meters away, while it was in full charge."

"You're right about that. He's certainly no slouch with that spear," Shen said as he kept a cautious eye on Gamebringer. "You're the anthropologist; shall I give it back to him?"

"I doubt if he'll object to your handling it. After seeing that blaster operate, he probably thinks we're gods of some sort." As Shen slid his blaster into its holster, she added, "But take it slow."

"Very!" Shen agreed.

Shen pulled the spear from the carcass. It took considerably more effort than he had expected. There had been astonishing power behind that throw. He noted the carefully shaped butt—that explained the power and the accuracy. It was shaped to fit into an atlatl or throwing stick. An early application of the principle of the lever, it added enormous efficiency over the shaft-thrown missile. Shen turned the spear in his hands. The workmanship was craft approaching art. Primitive, it might be. Crude, it wasn't.

Shen carried the spear to the edge of the brush with formal respect. He laid it on the ground and stepped back some three meters. "I am Shen." He pointed to himself as he spoke. "We come in peace and would be your friends." He accompanied his words with gestures. He was aware of Tasa coming up behind him and stopping a respectful distance

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back. Nice touch, Shen thought. They'd probably have resented Tasa's showing equality.

Federation scout and primitive tribesman faced each other, neither quite sure of what to do next.

"Move the cat's carcass over with the spear," Tasa suggested quietly. "And make it look like it was your idea."

"Right!" Shen answered in an equally quiet voice. "He struck first; it's his kill." He turned and walked to the body. He lifted it in his arms—nearly giving himself a hernia in the process. It had to weigh close to ninety kilos. The fact that it was very dead weight didn't help. He managed not to display the strain as he carried it to the spear.

He laid it down with due honor and picked up the spear again. "Your spear." He amplified his words by pointing first to Gamebringer, then to the spear. "Your kill." Again, he made his gestures carry the sense of his words. He laid the spear across the carcass and stepped back with a small, formal bow.

The expression on Gamebringer's face told him he'd acted correctly. Gamebringer smiled and began to approach.

Shen noticed that the other man wasn't nearly so brave as the one who had thrown the spear. The man reached forward and touched the spearthrower and said something. A brief exchange followed. As Shen and Tasa watched, they couldn't fail to interpret the spear thrower's attitude as one of casual disagreement and total disregard for the opinion of the other.

When Gamebringer began to move toward the body of the cat, Plantfinder's caution and awe of what he had witnessed jarred him into reaching out and grasping his brother's arm. "Wait!" Where are you going?"

"To get my spear, of course. What else?"

"But they are gods. They may kill you. You should leave the spear and the fang-face as an offering. You don't know how to treat them." Plantfinder argued.

Gamebringer was disgusted with his brother's timidity and he silenced him harshly. "They may be gods, but they can be hurt, or even killed. You saw how the woman acted when fang-face charged."

"They may have been testing us—waiting to see if we would react with honor."

"Perhaps, brother. But I see no honor in fleeing like frightened grass eaters. Besides, I worked many hours on that spear, and I'm not going to throw it away. The man has a thing which can throw lightning; he doesn't need my spear, and I do. And I would like to know more of these—gods."

When Gamebringer reached the edge of the clearing, he briefly knelt and examined the dead fang-face. He probed the charred hole in its neck with his finger. The blaster bolt has severed the spine. Indeed, the weapon was fearsome—to be respected—as was its wielder. He picked up his spear, turned its point to the earth, and said, "I am Gamebringer, scout and hunter for The People. I greet you in friendship."

Gamebringer stooped, and with deft slashes of his knife, removed the four huge canine teeth from fang-face's jaws. He stepped forward and laid them on

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the ground. "We struck as one. Each has honor in the kill."

Shen nodded and studied the massively elegant man before him: coal black hair and eyes to match, well tanned and functionally cut hide briefs, woad tattoos, primitively powerful in design, and a heavy pectoral of claws and fangs. He said, in what he hoped was a friendly tone to Gamebringer's way of thinking. "I don't know what you said, big fella, but you sure aren't scared of us."

Nope, Shen thought, you may be impressed, but you sure aren't overawed like your buddy. You are one bold, collected young hunter.

As each man spoke, recording devices on board the ship began to analyze the language. Others opened files, and, noting date and time, entered "Friendly contact established."

Contact with the tribe went slowly at first. Gamebringer and his brother were frequent visitors. Flintchipper, Blazemaker, and an older, partially crippled man known as Healer, showed up occasionally. With the aid of the linguistic computer, Shen and Tasa began to get a foundation in the local language. It was more complex than they had expected. Especially for a people whom they'd originally estimated as slightly beyond the grunt and point stage.

"I'm ready to believe that tool use developed after language on this planet, Shen," Tasa commented about three weeks later over dinner and language analysis printouts.

"Could be," Shen agreed. "It wouldn't be the first time."

"You've noticed that they address us differently than they do each other," Tasa continued. "Additionally, the younger men use still different semantics when they speak to that one they call Healer."

Shen nodded. "With us, it seems to be a formal, person to alien, style. Probably use the same forms when they talk to leaders of another tribe. In the case of the old man—you notice they all defer to him—it's probably a form denoting position and respect."

Shen laughed as a discontinuity occurred to him. "All except Gamebringer. He uses the same language, but gives it inferences all his own. He smiles, agrees, then goes right ahead and does as he thinks is best. Others' opinions are damned."

Tasa smiled. "I'm not quite sure what to make of that one. He's a thinker as well as a doer. He's certainly anything but stupid. I get the impression that he considers us "just folks." He sure doesn't appear to hold much faith in the god idea."

Shen nodded enthusiastic agreement. "I have to admit he's more comfortable to be around than Plantfinder. That one is so overawed that he positively grovels if I even speak to him. It gets to be tiresome"

"I wouldn't trust Gamebringer in the ship, though," Tasa commented.

"Agreed. Give him a few months of training, and he'd be ready to take this ship and go adventuring. Way! Give him a week alone in here, and he'd probably try it!"

Their estimate was pessimistic. Three days on the teaching unit, and Gamebringer would have been ready to pack up his family and leave. It was wise

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they never gave him the opportunity. He would have considered Shen and Tasa too dangerous to take along.

Weeks passed, and Shen and Tasa learned much about Gamebringer's people. Gamebringer's people also learned much about Shen and Tasa. Some of which troubled them deeply.

"They have given us such gifts," Plantfinder said as he examined the bow-drill he reverently held in his hand. "They have taught Flintchipper to use a pad of hide and a piece of antler to get edges on his blades such as we have never seen. The woman has taught our women to shape the clay of the river and harden it in a fire, so we may store food and protect it from rodents and insects." Plantfinder sighed in ecstatic awe.

"She also showed the women how to use that same drill you hold to make fire for themselves," Blazemaker complained petulantly.

Gamebringer gave a sarcastic laugh. "If you'd been around to do your job instead of off peeping at the young girls bathing in the river, she wouldn't have needed to. And nobody said you can't use the fire drill as well."

"But making the fires is *my* job," Blazemaker whined, wearing his indignity like a battle coup. "And the new firemaker defies tradition!"

"Traditions change, Blazemaker," Gamebringer stated flatly. "The tribe must learn and grow, or die out. Your constant complaints are as tiresome as my brother's unending paens to the glory of these *gods*."

He rose and walked from the fire. "Even my women's nagging is better company," he grumped and stalked into the evening gloom.

Shen and Tasa were too fascinated with the apparent sophistication of supposed savages to notice the effect they were having on the tribe.

The smell of klaht mingled with the strains of noseflute, rattle, drum, and a strange plucked stringed instrument, resembling a two stringed bow held against a drum head. It had an eerie plaintive quality that counterpointed the content of the song.

Women's voices carried a simple tune about the prowess, or lack thereof, of a certain neighboring tribe's males. It was full of rhythm, melody and humor.

"If you think their musical art is advanced, you should see the pictographs and petroglyphs that Healer showed me. I've seen worse art in the galleries on Ionia—and they're supposed to represent the finest art in the Federation." Shen flopped in a seat and propped one foot on the edge of the galley table.

Tasa smiled her agreement. "They're a bright, talented people, Shen. Look at how fast they picked up on the innovations we've shown them."

"Too fast, perhaps, Tasa. I'm not sure they can handle the cultural changes that are sure to intrude. They pick up our attitudes—as well as the technology."

"Oh, I think they're bright and stable enough to adjust, Shen. They'll use what they can apply and drop the rest. Besides, we're nearly finished here. Six months from now, very little will have changed from the way it was when we arrived."

Under the influence of Tasa's confidence, Shen shrugged aside his vague

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concern and resumed enjoying the klaht and the music.

He would have been wise to heed his doubts—others shared them.

"They must be killed and their silver-cave-that-flies destroyed." Tribefather's voice was somber and unhappy.

Healer and Blazemaker sat beside him and nodded in agreement.

Gamebringer stood before them and listened impassively. He noted that Blazemaker nodded with considerably more enthusiasm than the others. Nasty, jealous little weasel, Gamebringer thought.

"We have considered this for many days. We see no other alternative," Tribefather continued. "Since it was you who first brought them to us, it must be your resposibility to destroy them." The formal words rolled on. "We do not like this decision—it is simply necessary."

"It seems an evil way to repay the gifts they have given us," Gamebringer stated and stared at Healer. The old man squirmed uncomfortably under his gaze. "Was it not they who showed you the plants which could be boiled and the juices used to open the painful swellings on the skin and repair wounds without pain? Did they not teach you how to clean a wound and stitch it closed so that it would not fester and kill?"

He paused as the elders shifted uneasily. "Besides, what makes you think that they *can* be killed. Are they not gods?"

Tribefather answered. "They have given us many gifts and much kindness. They have shown us nothing but good will and friendship. That is true. But they also have struck at the roots of our existence. Their ways are not ours—cannot be ours. *We* require *our* traditions. The authority and resposibilities of each member of this tribe cannot be questioned. We need those rules to survive."

His voice rose in intensity as he asked, "Have you not noticed the decreasing respect that the women show the men—and that the younger men show their elders and superiors? They use casual talk when formality is required. The women do tasks as they feel like it—not when we need them done."

Tribefather paused to catch his breath and settle his emotions. He went on, "If it continues, there will *be* no People. Our neighbors will slaughter us and take our women for their own. It must stop now!"

"Then why not just tell them to leave—or leave ourselves. We must move shortly anyway. The game grows scarce, as you know." Gamebringer kept his voice calm. He wanted answers—not argument. He too had noticed the deterioration in the social structure.

"If we left—they could follow," Tribefather explained. "If we asked them to leave—even if we explained why—they might. But, others would come. They are no more than scouts for their tribe. They are powerful, but they are as mortal as you and I—as you well know. And that which a man can build, another can destroy."

Tribefather leaned back against the cave wall in unhappy resignation. Healer added. "It is our lives or theirs, Gamebringer. There is no other answer we can trust."

He stopped and looked hard at Game-

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bringer. "If you fail, you will have destroyed us all," he concluded.

Gamebringer nodded. It soured his stomach, but the logic was inescapable. "And how am I supposed to set about this task? I might kill one, but the other would be sure to kill me—and the rest of The People shortly thereafter."

Blazemaker answered with an enthusiasm that earned him bitter looks from Healer and Tribefather. "I have considered that, and I think I have a solution."

"I thought you might," Gamebringer commented acidly. An accident was going to happen to Blazemaker, he resolved—a very final accident.

Blazemaker ignored the comment and went on. "You know the great boulder that rests near the top of the ridge, the one overlooking the trees from which you first observed the arrival of these aliens?

Gamebringer nodded and Blazemaker continued, "It is as big as their silver thing and could crush it and drive it over the edge into the canyon. That boulder is about to fall; in fact, it will probably come down of its own weight in the rains of next gathering season. If the brush and earth were dug away from beneath it, it would fall now."

"So?" Gamebringer asked. "What good will crushing that copse of trees do?"

"It won't hit the trees. The shallow gully beneath the boulder curves around them. It will guide the boulder directly into the silver thing." Blazemaker smiled nastily. "If it misses, it will look like a natural fall—and we can plan some other way."

Gamebringer fought down an urge to strangle Blazemaker on the spot. Destroying these strangers might be necessary, but that didn't give the hyena the right to enjoy it. "And how am I to release the boulder and not be crushed, oh great planner?"

The nasty smile remained as Blazemaker said, "I'm sure you'll find a way. Traps are your specialty, aren't they?"

"Enough!" Tribefather snapped. He dismissed Gamebringer with, "Tell no one of this. There are many in the tribe who would try to stop you. They believe these people are gods. Especially Plantfinder."

Gamebringer nodded and left.

Several days later, Gamebringer stood beside the great boulder and stared sourly at it. It gave him no pleasure that Blazemaker had been correct in his analysis. The boulder would take the path described. It would take little to free it. Bracing it to release when he desired was easily solved. An oversized deadfall trigger would support the boulder and release at the touch of a long pole or the tug of a vine.

He also spent much time surveying the surrounding area for sign of any large predator. His search confirmed the hunch he had formed during recent hunting trips. The predators had followed the migrating herds. The nights were safe. He could trip the release when the gods were asleep. They couldn't wake and react fast enough to save themselves.

Gamebringer set about his unpleasant task. He took his time and worked carefully. He had no desire to be accidentally crushed, or have the boulder strike an empty target.

It took him two weeks to complete his preparation. The moon would be

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full. It was a good sign. He avoided thinking about for whom it was a good sign.

Gamebringer's distress over the act that circumstances had forced upon him communicated a wrongness, despite his attempts at keeping up his normal casual, cheerful demeanor.

"I wish I knew what was going on, Tasa. I know the tribe is getting ready to move after the game herds, but there's more going on than that. Something doesn't feel right."

'What, for heaven's sake? I haven't noticed a thing out of the ordinary with the women."

"Nor have I with most of the men. It's Gamebringer that's bothering me. He—I don't know—he seems more distant these past few days."

Tasa laughed. "Well, I'm not surprised. He's been gone most of the time. He has to scout out the route the tribe will follow when they move. On his scale of things, that's a huge responsibility."

Shen shrugged. "You're probably right." But it still bothered him.

He sat on the command bridge long after Tasa had gone to bed. Finally he got up and, for the first time in weeks, set the ship's defenses to standby alert. I'm more than likely just wasting power, he thought as he climbed into his bunk.

In all probability his action saved both their lives.

When the tribe had settled into sleep that night, Gamebringer slipped out of the cave with the born stealth of a true hunter. It took only a few moments in the bright moonlight to reach the boulder, but he stood beside it for a long time before he took up the vine he had rigged to trip the release. His senses took in the sounds and smells of the night. The dry earth smell of the surrounding area was faintly tinged with the scent of water in the canyon below. Crickets sang in cheerful chorus against the occasional sad cry of a restless bird. A peaceful night—a peace he was about to shatter with violence. He sighed and stepped to the vine.

"What are you doing!?" The voice made him jump, and he spun to find his brother standing behind him.

"What I must!" he growled. "Now leave this place. You want no part of this—and you can't stop me."

Plantfinder hissed, "You would defile the gods! I must stop you!" and hurled himself at his brother.

For a moment they wrestled on the lip of the shallow gully, then, locked in struggle, they rolled over the edge.

Gamebringer felt the vine tangle about them as they rolled. He felt it go taut and heard the snap as the branches supporting the boulder gave way.

With a frantic effort he broke free of his brother and the entangling vine. He scrambled desperately up the slope, the griding crunch of the boulder beginning its plunge echoed in his ears, spurring him on.

He felt the enormous mass brush past him, and heard Plantfinder's abrupt, piercing, death shriek—then he was gasping on the warm earth of the gully's edge.

Gamebringer watched the boulder smash with deceptive slowness through the moonlight. Its rumble crushed the night. Terrified birds erupted clattering from its path, adding their cries to the din.

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He saw it strike the silver home of the gods; watched them hurtle together into the canyon in a grotesque ballet that was unexpectedly silent—then—the night exploded.

The ship's sensors detected the vibration of the oncoming boulder, but didn't define it as dangerous until the boulder bounded free of the masking trees—a kiloton of onrushing devastation.

The ship acted.

The meteor screen came on just as the boulder struck. The energy screen held, but the delay before the defenses reached full active status was enough to topple the ship into the canyon.

Gravity normalizers righted the ship as its drives activated.

Defenses designed to reduce asteroids to gaseous dust, in open space, flared in atmosphere. Air turned to fusion fire.

The boulder liquified and evaporated in atomic violence. Molten rock splattered. The canyon walls slagged. The atmoshere for a hundred meters in any direction simply exploded.

Within the firestorm, the ship oriented itself to clear the plane of the ecliptic. Milliseconds later, the sublight drives hurled the ship into the safety of deep space.

To the few human observers, it simply disappeared.

The atmosphere didn't part before the ship—at those velocities it couldn't—it compressed. A fifty mile deep column of gas was mashed to a viscous liquid that trailed in flaming rivulets off the ship's edge.

The resulting vacuum sucked molten rock from the canyon into itself and added it to the gasses to form a fiery column twenty miles high. The concussion of the sonic thunder clap snapped trees. The ringing which resulted from that enormous blast wouldn't leave the ears of the tribe for weeks.

Healer and Tribefather found Gamebringer the next morning, battered and deafened, but alive, weeping over the crushed body of his brother. They gently led him back to the camp.

Several weeks later, Gamebringer stood before Tribefather and Healer. The people were assembled behind Gamebringer.

Blazemaker was noticeably missing. He had slipped out to observe his triumph over the gods at close range—his gloating cost him his life. His component atoms contributed a few very minor flickers to the fire column.

"Gamebringer," Tribefather addressed him with sad formality, "you succeeded in the nearly impossible task We demanded of you. For this We honor you with a new name—Godkiller. But in succeeding, you fought with, and caused the death of your brother."

Tribefather paused and sighed unhappily. "Under the law of our people, this is an unforgivable crime."

Again he paused to let the tribe consider the situation. "If you had deliberately killed your brother, your life would be forfeit. As it is, you must take your family and your belongings and go from us forever. We truly wish it could be otherwise. Justice, however, requires it, even if it may seem harsh."

Gamebringer, now called Godkiller, nodded. It was just.

"Besides," he would later tell his women, "I was tired of the rigidity of their thinking and their tradition-shack-

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led rules anyway. I can do better on my own. The ones we called gods gave me much to think about.

"Not only that, I'm not at all sure that mighty pillar of fire was the sign of their destruction. I watched those beings arrive, and they descended slowly on a mighty flame."

Godkiller laughed shortly. "A hunted buffalo raises a lot of dust as it flees—it can also be very deadly when it turns back. I have no wish to be around if this particular buffalo decides to return!"

"That particular buffalo" was, at the time, several light years away and had no intention of returning—then or ever.

"Inventive, aren't they?" Shen commented sarcastically, as he watched the ship's auto-recorder play back the attack. "Not to mention murderous."

"Not their fault, Shen. You were right about our attempts to help them straining their culture. In retrospect, the recordings we made show the developing stresses quite clearly. If I'd been more objective—and I should have been—I'd have spotted the symptoms. I violated one of the prime rules of a cultural anthropologist: don't get involved."

"Maybe, Tasa. Maybe. But I can think of a thousand other primitive cultures who would have made us unwelcome without resorting to such carefully planned violence. Violent reaction to a direct threat is one thing; a carefully planned murder is something else entirely."

"Perhaps you're right. But I still can't help thinking we precipitated it." Tasa shook her head in frustration. "I guess future research teams will find out—one way or the other."

Shen activated the computer and called up the official log of the expedition. "If they do, they'll have to do it by long range observation. The last thing we need is for those mayhem prone savages to get any help, accidental or otherwise, in developing interstellar drives. As expedition commander, I'm interdicting that planet as of now."

Tasa watched as Shen keyed the prohibiting pictogram onto the screen. "Isn't full interdiction awfully harsh, Shen? Couldn't it be reduced to specialist teams only?"

Shen shook his head in emphatic negation. "It's going to be a long, long time before those people make good neighbors—and they're just too damned smart for us to risk exposing them to any additional advanced technology. We've probably given them too many high-tech ideas already."

Shen thought in silence for some time then said, "Maybe specialist teams *are* called for. Teams to slow and divert those savages' technological advance until they develop some manners."

He shivered as a thought struck him. "With the kind of ruthless inventiveness they displayed, Way help us all if they develop star drives before they're really civilized."

He entered the Mission Commander's official seal in the log and switched the computer to auto-record.

"Cheer up, Tasa! You didn't do too badly for a first mission. Make us a fresh pot of klaht, and I've got come contraband to add to it to make us feel better—or I'll even make the klaht, for that matter. You deserve the break."

Tasa shook her head at him, a grin twitching the corner of her mouth.

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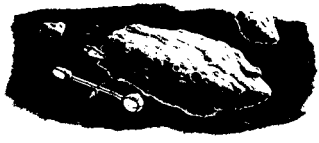
"Shen, you are absolutely incorrigible. I know how you can mess up a galley. I appreciate the offer, but *I'll* make the klaht." The grin was full grown as she headed toward the galley.

Two days after his banishment, Godkiller and his women and children were gone from the circle of the tribe.

They would not be forgotten. Godkiller would become a legend surviving across millennia. In the way of legends, he would be remembered both for his error and his sacrifice, but never together. In the lands through which he and his family traveled, he would become the challenger of gods, the fire bringer, the hunter of the heavens. In the memory of the descendants of Tribefather and the tribes they contacted, he would become the betrayer and brother killer. In lands where the legends intertwined, Godkiller would become two, or three, or many different legends.

In the records of the Ionian Survey Scouts, the warning pictogram would remain. The pictogram which said "Technologically oriented primitives —EXTREMELY DANGEROUS— OBSERVATION ONLY; look but don't contact; listen but maintain silence." The mark of interdiction, which effectively isolated Terra from the rest of the galaxy for the next sixty millennia, until accident and a very smart bulldozer would reopen contact. But that's another story entirely. ■



FINITE CORNUCOPIAS

(continued from page 10)

Unfortunately, it isn't. Neither is anything else. Letting people become addicted to such delusions ultimately does them a grave disservice, because sooner or later reality will catch up with them. The more deeply they believe the delusion, the sooner that will happen, and the more devastating it's likely to be when it does.

What does all this have to do with space? "Free and unlimited" is a delusion no matter what it applies to, or where. The bigger and more remote the resource, the more tempting the trap. But we've now had ample opportunity to learn all these things. If we're smart, we'll apply them *from the beginning* to our development of any brand new resource reservoir. The Solar System is big, but it's not infinite. There is a lot of wealth out there, but it's *not* inexhaustible. If we carefuly avoid using such language in the first place, maybe we can avoid ever getting into the painful situation in which New York now finds itself—trying to teach formerly blissful consumers that even the biggest cornucopia has a bottom. ■

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Harry Turtledove
(formerly "Eric G. Iverson")

AROUND THE SALT LICK

When two cultures meet, somewhat similar but separated by a fundamental barrier, at least one new category of beings is likely to emerge.

Bob Walters

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Thomas Kenton paused to look westward at land no man had seen before. The gap in the mountains revealed an endless sea of deep green rolling woods ahead. Virginia had been such a wilderness once, before the English landed eighty-odd years ago.

"But no more, eh, Charles?" he said to the sim at his side. "Virginia fills with farmers, and the time has come to find what this western country is like."

Find, Charles signed. Like most of the New World's native subhumans, he understood speech well enough, but had trouble reproducing it. Signals based on those used by the deaf and dumb came easier to him.

The sim was close to Kenton's own rangy six foot one. His eyes, in fact, were on a level with the scout's, but where Kenton's forehead rose, his sloped smoothly back from beetling brow ridges. His nose was low, broad, and flat; his mouth wide; his teeth large, heavy, and yellow; his jaw long and chinless. As an Englishman, he would have been hideous. Kenton did not think of him so; by the standards of his own kind, he was on the handsome side.

On, Charles signed, adding the finger-twist that turned it into a question. At the scout's nod, he strode ahead, his deerskin buskins silent on the mossy ground. His only other clothing was a leather belt that held water-bottle, hatchet, knife, and pouches for this and that. His thick brown hair served him as well as did Kenton's leather tunic and trousers.

A turkey called from a stand of elms off to one side. Kenton felt his stomach rumble hungrily, and an instant later heard Charles's. They grinned at each other. *Hunt,* the scout signed, not wanting to make any noise to alert the bird.

The sim nodded and trotted toward the far side of the trees. Kenton gauged distances. If all went well, the shot would only be about fifty yards—a half-charge of powder should serve. He poured it into the little charge-cup that hung from the bottom of his powder-horn, then down his musket barrel it went.

Working with practiced speed, he set a greased linen patch on the gun's muzzle, laid the round ball on it, and rammed it home till it just touched the powder. Then he squeezed down on the first of the musket's two triggers, setting the second so it would go off at the lightest touch. The whole procedure took about fifteen seconds.

And it was all needless. Kenton waited, expecting the frightened turkey to burst from cover at any moment. What emerged, however, was Charles, carrying the bird by the feet in one hand and his bloody hatchet in the other. He was laughing.

"Good hunting," Kenton said. He carefully reset the first trigger, making sure he heard it click back into place. He did not begrudge the sim the kill; he welcomed anything that saved powder and bullets.

Stupid bird, Charles signed. *I get close, throw.* He pantomimed casting the hatchet. It had a weighted knob at the end of the handle to give it proper balance for the task. Even wild sims were dangerous, flinging the sharp-chipped stones they made.

The sun was going down over the vast forest ahead. "We may as well camp," Kenton decided when they came to a

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small, cool, quick flowing stream. He and Charles washed their hands and soaked their feet in it. They drank till they sloshed, preferring the stream's water to the warm, stale stuff in their canteens.

Then they scoured the neighborhood for dry twigs and brush for the evening's fire. Kenton was careful to make sure trees and bushes screened the site from the west. When he took out flint and steel to set off the tinder at the edge of the fire, Charles touched his arm. *Me, please,* the sim signed.

Kenton passed him the metal and stone. Charles briskly clashed them together, blew on the sparks that fell to the tinder. Soon he had a small smokeless blaze going.

When he started to pass the flint and steel back to Kenton, the scout said, "You may as well keep them; you use them more than I do, anyway."

The flickering firelight revealed the awe on Charles's face. That awe was there even though he was of the third generation of sims to grow up as part of Virginia. In the wild, sims used fire if they came across it, and kept it alive as best they could, but they could not start one. To Charles, Kenton's simple tools conveyed a power that must have felt godlike.

The scout burned his hands and his mouth on hot roasted turkey, but did not care. Blowing on his fingers, he chuckled, "Better than going hungry, eh, Charles?"

The sim grunted around a mouthful. He did not bother with any more formal reply; he took his eating seriously.

They tossed the offal into the stream. Charles had taken the first watch the night before, so tonight it belonged to Kenton. The sim stripped off his shoes and belt, curled up by the fire—with his hair, he needed no blanket—and fell asleep with the ease and speed Kenton always envied. Charles and his breed never brought the day's troubles into the evening with them. Were they too simple or too wise? The scout often wondered.

He let the fire die to red embers that hardly interfered with his night sight. The moon, rounding toward full, spilled pale light over the forest ahead, smoothing its contours till it resembled nothing so much as a calm, peaceful sea.

The ear pierced the illusion that lulled the eye. Somewhere close by, a field mouse squeaked, briefly, as an owl or ferret found it. Farther away, Kenton heard a wolf howl to salute the moon, then another and another, until the whole pack was at cry.

The eerie chorus made the hair prickle upright at the nape of the scout's neck. Charles stirred and muttered in his sleep. No one, man or sim, was immune to the fear of wolves.

The pack also disturbed the rest of a hairy elephant, whose trumpet call of protest instantly silenced the wolves. They might pull down a calf that strayed too far from its mother, but no beasts hunted full-grown elephants. Not more than once, anyway, Kenton thought.

The normal small night noises took a while to come back after the hairy elephant's cry. The scout strained his ears listening for one set in particular: the grunts and shouts that would have warned of wild sims. No camp was in earshot, at any rate. Hunting males ranged wildly, though, and these sims

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would not be in awe of men from long acquaintance with them, and thus doubly dangerous.

A coughing roar only a couple of hundred yards away cut short his reverie on the sims. He sprang to his feet, his finger darting to the trigger of his musket. That cry also roused Charles. The sim stood at Kenton's side, hatchet ready in his hand.

The roar came again, this time fiercely triumphant. *Spearfang*, Charles signed, *with kill*.

"Yes," Kenton said. Now that that beast had found a victim, it would not be interested in hunting for others, such as, for instance, himself and the sim. In dead of night, he welcomed that lack of interest.

All the same, excitement prickled in him. The big cats were not common along the Atlantic seaboard, and relentless hunting had reduced their numbers even in the hinterlands of the Virginia colony. Not many men, these days, came to the governor at Portsmouth to collect that £5 bounty on a pair of fangs.

Kenton imagined the consternation that would ensue if he marched into the Hall of Burgesses with a score of six-inch-long ivory daggers. Most of the clerks he knew would sooner pass a kidney stone than pay out fifty pounds of what was not even their own money.

The scout snorted contemptuously. "I'd sooner reason with a sim," he said. Charles grunted and made the question-mark gesture. "Never mind," Kenton said. "You may as well go back to sleep."

Charles did, with the same ease he had shown before. Nothing troubled him for long. On the other hand, he lacked the sense for long-term planning.

Kenton watched the stars spin slowly through the sky. When he reckoned it was midnight, he woke Charles, stripped off his breeches and tunic, and rolled himself in his blanket. Despite exhaustion, his whirling thoughts kept him some time awake. This once, he thought, he would not have minded swapping wits with his sim.

Sunrise woke the scout. Seeing him stir, Charles nodded his way. *All good*, the sim signed. *Spearfang stay away*.

"Aye, that's good enough for me," Kenton said. Charles nodded and built up the fire while Kenton, sighing, stretched and dressed. Jokes involving wordplay were wasted on sims, though Charles had laughed like a loon when the scout went sprawling over a root a couple of days earlier. The turkey was still almost as good as it has been the night before. Munching on bulbs of wild onion between bites went a long way toward hiding the slight gamy taste the meat had acquired.

The way west was downhill now; the explorer and sim had passed the watershed not long before they made camp. The little stream by which they had built their fire ran westward, not comfortably toward the Atlantic like every other one with which Kenton was familiar.

The scout strode along easily, working out the kinks a night's sleep on the ground had put in his muscles. His mouth twisted. A few years ago, he would have felt no aches no matter what he did. But his light-brown hair was beginning to be frosted with gray, and to recede at the temples.

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He was proud the governor had chosen him for this first western journey, rather than some man still in his twenties. "Oh, aye, a youngster might travel faster and see a bit more," Lord Emerson said, "but you're more likely to return and tell us of it."

He laughed out loud. He wondered what Lord Emerson would have said after learning of his saberfang-hunting plans. Something pungent and memorable, no doubt.

Charles stopped with a perplexed grunt, very much the sort of sound a true man might have made. *Ahead strange noise,* he signed.

Kenton listened, but heard nothing. He shrugged. His eyes were as sharp as the sim's, but Charles had very good ears. They were surely no match for a hound's, nor was the sim's sense of smell, but Charles could communicate what he sensed in a way no animal could match.

"Far or close?" the scout asked.

Not close.

"We'll go on, then," Kenton decided. After a few hundred cautious yards, he heard the rumble too—or perhaps felt would have been the better word for it. He thought of distant thunder that went on and on, but the day was clear. He wondered if he was hearing a waterfall far away. "Kenton's Falls," he said, trying out the sound. He liked it.

Charles turned to look at him, then made as if to stumble over a root. The sim got up with a sly grin on his face. Kenton laughed too. Charles had made a pun after all, even if unintentionally.

The game path they were following twisted southward, bringing the edge of a large clearing into view. Kenton stared in openmouthed wonder at the teeming, milling buffalo the break in the trees revealed. There were more of them than Virginia herds had cattle.

The beasts were of two sorts. The short-horned kind, with its hump and shaggy mane, was also fairly common east of the mountains; it closely resembled the familiar wisent of Europe. The other variety was larger and grander, with horns sweeping out from its head in a formidable defensive arc. Only stragglers of that sort reached Virginia. They were notoriously dangerous to hunt, being quicker and stronger than their more common cousins.

The rumble the sim and scout had heard was coming from the clearing, from the pounding of innumerable buffalo hooves on the turf. Charles pointed to the herd, signing, *Good hunting, good eating.*

"Good hunting indeed," Kenton said. Its meat smoked over a fire, a single buffalo could feed Charles and him for weeks. But the scout saw no need for that much work. With the big beasts so plentiful, it would be easy to kill one whenever they needed fresh meat.

Good hunting in another way also, the scout realized. A herd this size would surely draw wolves and spearfangs to prey on stragglers. Kenton smiled in anticipation. He would prey on them.

"Let's get some meat," Kenton said matter-of-factly. Charles nodded and slipped off the trail into the trees. The scout followed. He could just as well have led; the sim and he were equally skilled in woodscraft. But he would not

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go wrong, letting Charles pick a spot from which to shoot.

Once away from the trail, the scout felt as though the forest had swallowed him. The crowns of the trees overhead hid the sun; light came through them wan, green, and shifting. Shrubs and bushes grew thick enough to reduce vision to a few yards, but not so heavily as to impede progress much. The air was cool, moist, and still, with the smell of earth and growing things.

Steering by the patterns of moss and other subtle signs, Charles and Kenton reached the clearing they had spied in the distance. It was even larger than the scout had thought, and full of buffalo. More entered by way of a game track to the north that was wider than most Virginia roads; others took the trail south and west out.

Charles picked a vantage point where the forest projected a little into the clearing, giving Kenton a broad view and a chance to pick his target at leisure. "Good job," the scout murmured. Charles wriggled with pleasure at the praise like a patted hound.

But Kenton knew there was more to the sim's glee than any dog would have felt. Charles's reasoning was slower and far less perfect than a man's, but enough for him to understand how and why he had pleased the scout. People who treated their sims like cattle or other beasts of burden often had them run away.

Kenton shook his head slightly as he aimed at a plump young buffalo not thirty yards away. If Charles wanted to flee on this journey, he had his chance every night.

The flintlock bucked against the scout's shoulder, though the long barrel of soft iron reduced the recoil. Buffalo heads sprang up at the report; the animals' startled snorts filled the clearing. Then the buffalo were running, and Kenton felt the ground shudder under his feet. If the sound of the beasts' hooves had been distant thunder before, now the scout heard the roar as if in the center of a cloudburst. Charles was shouting, but Kenton only saw saw his open mouth—his cry was lost in the din of the stampede.

The cow the scout had shot tried to join the panic rush, despite the blood that gushed from its shoulder just below the hump and soaked its shaggy brown hair. After half a dozen lurching strides, blood also poured from its mouth and nose. It swayed and fell.

Several other buffalo, most of them calves, were down, trampled, when Kenton and Charles went out into the clearing, which was now almost empty. The scout took the precaution of reloading, this time with a double charge, before he emerged from the woods, in case one of the buffalo still on their feet should decide to charge.

Crows and foxes began feasting while Charles was still cutting two large chunks of meat from the tender, fat-rich hump. Soon other hunters and scavengers would come: spearfangs, perhaps, or wolves or sims. Kenton preferred meeting any of them on ground of his own choosing, not here in the open. He drew back into the woods as soon as Charles had finished his butchery. They got well away from the open space before they camped, and Kenton made sure they did so in a small hollow to

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screen the light of his fire from unwelcome eyes.

After he had eaten, he wiped his greasy hands on the grass, then dug in his pack for his journal, pen, and inkpot. He wrote a brief account of the past couple of days of travel, added to the sketch map he was keeping.

As always, Charles watched with interest. *Talking marks?* he signed.

"Aye, so they are."

How do marks talk? the sim asked, punctuating the question with a pleading whimper. Kenton could only spread his hands regretfully. Several times he had tried to teach Charles the ABC, but the sim could not grasp that a sign on paper represented a sound. No sim had ever learned to read or write.

Then the scout had an idea—maybe his map would be easier than letters for Charles to understand. "Recall the creek we walked along this morning, how it bent north and then southwest?"

The sim nodded. Kenton pointed to his representation. "Here is a line that moves the same way the creek did."

Charles looked reproachfully at the scout. *Line not move. Line there.*

"No; I mean the line shows the direction of the creek. D'you see? First it goes up, then down and over, like the stream did."

So? In their deep, shadowed sockets beneath his brow ridges, Charles's eyes were full of pained incomprehension. *Line not like stream. How can line be like stream?*

"The line is a picture of the stream," the scout said.

Line not picture. Charles' signs were quick and firm. *Picture like thing to eyes. Line not like stream.*

Kenton shrugged and gave up. That had been his last, best try at getting the idea across. Sim recognized paintings, even pen-and-ink drawings. Abstract symbols, though, remained beyond their capacity. The scout sighed, got out his blanket, and slept.

Instead of returning to the clearing, Kenton decided to parallel the game track down which the buffalo had fled. Mockingbirds yammered in the treetops high overhead, while red squirrels and gray frisked along the branches, pausing now and then to peer suspiciously down at the man and sim.

"An Englishman I met at Portsmouth told me there are no gray squirrels in England, only red ones," Kenton remarked.

No grays? Who ate them?

Kenton smiled, then sobered. There was more to the question than Charles, in his innocent ignorance, had meant. Men on both sides of the Atlantic were still hotly debating the notion someone had put forward a generation before: that the struggle of predator against prey determined which forms of life would prosper and which fail.

The scout liked the idea. To his mind, it explained why such beasts as spearfangs and hairy elephants lived in America but not in Europe, though their ancient bones had been found there. Men, even savages, were better hunters than sims. Already, after less than a century, spearfangs were scarce in Virginia. No doubt they had been exterminated east of the ocean so long ago even the memory of them was gone.

The thought of life changing through time horrified folk who took their Scrip-

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ture literally. Kenton could not fathom their cries of protest. America had shown so many wonders the Bible did not speak of—sims not least—that using Scripture to account for them struck him as foolish. Like most colonists, he preferred to judge truth for himself, not receive it from a preacher.

A little past noon, the scout began hearing the low rumble of many buffalo hooves again. He found a herd of them gathered at a salt lick, pushing and shoving each other to get at the salt like so many townswomen elbowing their way to a peddler's cart. He took out his journal and noted the lick. When settlers eventually came, they could use the salt to preserve their meat.

He had not intended to hunt that day, not when he and Charles were still carrying some of the buffalo hump. But a tawny blur exploded from the far side of the clearing and darted toward a yearling cow at the edge of the herd. The spearfang's roar sent the buffalo scattering in terror and made ice walk up Kenton's back.

The spearfang's powerful forelimbs wrapped round the buffalo's neck. Despite the beast's panic-stricken thrashing and bucking, the spearfang wrestled it to the ground. Excitement made the big cat's short, stumpy tail quiver absurdly.

The struggle went on for several minutes, the buffalo trying desperately to break free and the spearfang to hold it in place with front legs and claws. At last the spearfang found the grip it wanted. Its jaws gaped hugely. It sent its fangs slashing across the buffalo's throat. Blood fountained. The buffalo gave a final convulsive shiver and was still. The spearfang began to feed, tearing great hunks of dripping meat from the buffalo's flank.

Kenton swung up his musket, glad he had a double charge in the gun. Luckily, the spearfang was exposing its left side to him. He released the set trigger, took a deep breath and held it to steady his aim, touched the second trigger.

His flint and gunpowder were French, and of the best quality; only a farmer would use Virginia-made powder. Along with the twin triggers, they ensured that the musket would not misfire or hang fire.

The spearfang screamed. It whirled and snapped at its flank. But the wound was not mortal, for the spearfang bounded into the woods the way it had come.

"Oh, a pox," Kenton said; the shot had struck too far forward to pierce the heart. He paused to reload before pursuing the big cat. He was not mad enough to follow a wounded spearfang armed only with a brace of pistols.

As he had been trained, Charles trotted ahead to find the trail. Kenton soon waved him back to a position of safety; the spearfang had left a blood-spattered spoor any fool could follow.

Such overconfidence almost cost the scout his life. Once in the forest, the spearfang doubled back on its trail. Kenton did not suspect it was there till it burst from the undergrowth a bare ten yards to his left.

Those yawning jaws seemed a yard wide, big enough to gulp him down at a single bite. He had no time to turn and shoot; afterwards, he thought himself lucky to have got off a shot across his body, his musket cradled in the crook of his elbow.

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With a lighter gun, he probably would have broken his arm. But one of the reasons he carried a five-foot, eleven-pound rifle was to let him take snap shots at need—because of its weight, it had less kick.

The spearfang pitched sideways as the ball, which weighed almost a third of an ounce, slammed into its face just below a glaring eye. An instant later, Charles's hatchet clove the beast's skull. Kenton thought his bullet had already killed it, but was honest enough to admit he was never quite sure. His narrow escape made his hands shake so much he spilled powder as he reloaded, something he had not done since he was a boy.

Charles had to set a foot on the spearfang's carcass to tug his hatchet free. He used it and his knife to worry the fangs from the cat's upper jaw, handed Kenton the bloody trophies.

"Thanks." The scout wiped his sweat-beaded forehead with the back of his hand. "That, by God, is £5 I earned."

The sim shrugged. With his simple wants, money meant little to him. Ever practical, he signed, *Good meat back there.*

Here in this unexplored territory, £5 was of no more immediate use to Kenton than to Charles. The scout nodded, made his wits return to the business at hand. "So there is. Let's get at it." He and the sim walked back toward the buffalo the spearfang had killed.

Kenton made a semi-permanent camp near the salt lick, building a lean-to of branches and leaves for protection against the warm summer rain. He went back to the lick for both deer and buffalo, and added three more sets of spearfang teeth in less hair-raising fashion than he had collected the first.

The hunting was so easy it only required a small part of his time. He ranged widely over the countryside, adding to his map and journal. The more he traveled, the richer he judged the land. Not only was it full of game, but the rich soil and abundant water were made for farming.

Sometimes Charles accompanied him on his journeys, sometimes he went alone. The sim traveled too, though not as widely as Kenton. Often he would bring back to camp small game he had slain himself: rabbits, turkey, a beaver, a porcupine that proved amazingly tasty once it was skinned. They made a welcome change of diet.

Saw strange thing, Charles signed after one of his solitary jaunts. *Many buffalo bones.* He opened and closed his fingers several times, indicating some number larger than he could count.

He led Kenton to the spot the next morning. The scout whistled in surprise as he looked down into a dry wash at the tangle of whitened bones there. "Must be a hundred head, easy," he said.

Charles repeated the sign for an indefinite large number. Together they scrambled down the steep side of the ravine, going slowly and often grabbing at bushes for support. Kenton tried to imagine what could have made a herd plunge down such a slope. Even at full stampede, the buffalo should have turned aside.

Then the scout was among the bones. Scavengers had pulled apart many skeletons. Bushes were pushing through rib-

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cages, climbing over skulls. The herd had met disaster at least a year ago, Kenton judged.

Many great legbones were neatly split lengthwise, almost all the skulls smashed open. When Kenton found a fist-sized lump of stone with an edge chipped sharp, it only confirmed what he had already guessed. He tossed the hand-axe up and down.

Charles recognized it at once. *Sims. Wild sims.*

"Aye. No animals could've gone for the beasts' brains and marrow so." Likely, Kenton thought, the subhumans had driven the buffalo into the gully. He glanced round, as if expecting to see a sim crouching behind every shrub. He had never doubted sims lived west of the mountains, but this was the first sure sign of it, and a sobering reminder.

Big killing, Charles signed, his eyes traveling the scattered bones. Kenton wondered what was going through his mind, wondered if he was proud of the slaughter his distant cousins had worked. Some Englishmen trained their sims to hate and fear the wild ones. The scout had never seen the need for that. Finding out he was wrong might prove costly.

He did his best to keep his voice casual. "Let me know before you join them, eh?"

Charles's face was troubled. *Joke?* he signed at last.

Kenton dimly realized how hard it had to be for sims to keep track of men's vagaries they could not share. "Joke," he said firmly. Charles nodded.

They spent a while longer investigating the ravine. Kenton turned up a couple of more stone tools, but nothing to show that the sims had come back to this immediate area since the year before. That was some relief, if not much.

When Charles wanted to go off for some purpose of his own, Kenton said only, "I'll see you back at the camp this evening." The last thing he wanted was the sim thinking he mistrusted him. He wished he had kept his mouth shut instead of letting his stupid wisecrack out.

Thinking such dark thoughts, the scout decided to return to the salt lick. The chunk of venison he had cached in a tree probably would not be fit to eat by nightfall, not in this heat. And game was so easy to come by west of the mountains that he did not have to put up with meat even a little off.

He wormed his way to his familiar cover. Excitement coursed through him as he looked into the clearing round the lick. A spearfang had just slain a plump doe and was dragging the carcass back into the bushes to feed. Almost without Kenton's conscious volition, his rifle sprang to his shoulder and spoke.

The spearfang yowled in anguish as it staggered away from its kill. Kenton reloaded, hurried after it. He held his gun at the ready, although he did not think he would need it for such desperate work as before. The big cat's uncertain gait reflected a wound that would soon be fatal.

So it proved. Less than a furlong from the fallen deer, the scout found the spearfang dead, its mouth gaping in a last defiant snarl. Insects were already lighting on the carcass. They buzzed away as Kenton stooped beside it.

He set down his rifle, used his knife and a stone to pry out the beast's fangs. They were a fine pair, not much shorter than the gap between his thumb and lit-

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tle finger when he splayed them wide. He bound the two long canines with a rawhide thong, slipped them into his pouch with the rest.

He caught a slight motion out of the corner of his eyes. Still on his knees, he turned. "See, I'll be rich yet, Char—"

The words caught in his throat. The sim behind him was naked, and shorter and stockier than his companion. It hefted a stone in its right hand.

The tableau held for several seconds. The sim stared at Kenton as if unsure it believed its eyes. The scout cursed himself for putting his musket to one side. The sim could hurl its rock before he grabbed the gun. And even at a bare twenty feet, he might miss with a pistol.

All the same, his right hand was easing toward his belt when three more sims, all adult males, slid silently out of the woods. He ground his teeth—no chance now to get rid of the lot of them.

Perhaps he could frighten them off. He drew a pistol. That alone would have sent wild Virginia sims running; they had seen too often what guns could do. But these sims knew nothing of firearms. One drew back its arm to cast its stone.

Kenton fired the pistol in the air. At the report and the burst of white smoke, the sims shouted in fright. The scout thought they would flee, but the one that had its rock ready let fly with it, and that rallied the others. They rushed at Kenton.

He dodged the missile, snatched out his other gun, and fired at point-blank range. As happens too mournfully often in the heat of action outside romances, he missed. He brought the pistol down club-fashion on a sim's head. The subhuman staggered but still surged forward to grapple with him; sims had thicker skulls than men.

The scout was just as glad not to remember much of his fight with the sims. What he could recall hurt. He never quite lost consciousness, but after a while he could not fight back much, either. The sims were not sophisticated enough for deliberate cruelty, but when four of them were beating him into submission the result came close enough to satisfy anyone but the most exacting critic.

When he came back to himself, one sim was carrying him by the feet and another with its hands dug into his armpits. He wondered why the sims had not killed him on the spot. Twisting his head, he saw that the four he had battled were only part of a larger band. There must have been ten males altogether, most of them bearing big joints of meat from the deer the spearfang had killed and from the spearfang itself.

With so much other food, he thought, they could afford to indulge their curiosity about him. Humans were as fascinating to sims as the reverse; indeed, sims had kidnapped Kenton's great-grandmother when she was a baby, and did nothing worse to her than comparing her with one of their own infants before her father rescued her.

Men would have made the scout walk once they saw he could. The sims kept carrying him. Before long, he decided he would rather have walked; it was quite the most uncomfortable journey he had ever taken.

The hunting party was traveling northwest. They topped a ridge and started down the other side. Kenton saw

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smoke in the distance. The rise must have kept him from spying it before; his exploratory jaunts had gone farther south.

He still had some hope. Along with a hind leg of the doe, one of his captors was carrying his musket. The sim had no idea it held a weapon, or at least not a firearm. It was toting the gun upside down, and now and then would swing it like a club. That might have prompted it to pick up the piece, that or its never having seen anything like the musket before.

Another sim, worse luck, had appropriated the scout's belt. The subhumans might have been ignorant of gunpowder, but they had seen Kenton use a pistol as a bludgeon. To them, his powderhorn and the hilt of his knife (which was all they had seen, as it was still in its sheath) might have made similar weapons.

The very notion of a belt was new to them. One set down the haunch it was carrying and wrapped a vine around the middle. Then it stopped, looking foolish; the chipped stone it had borne with the meat had neither handle nor sheath to attach to the makeshift waistband.

The sim that had kept its comrades from panicking when Kenton fired in the air let out a loud hoot. It pulled free another, shorter length of vine. Pushing out its lips with concentration, it wrapped one end of the vine several times around the stone tool and the other around the leafy belt.

The scout would not have cared to have a large rock knocking against his thigh at every step he took, but from their grins, calls, and embraces, all the sims were greeting the contrivance with the same rapture Englishmen would have given to a flying machine.

Twilight was near when the band of sims made its triumphal entry into the camp. Females and young came pelting forward to greet the returning hunters. They shrieked with delight when they saw the bounty of meat the males were bringing to them, then suddenly fell silent on noticing Kenton.

The sims that had carried him so long unceremoniously dumped him on the ground not far from the fire. They wrapped vines around and around his arms and legs. He was not sure they made any knots, but the tough plants were so twisted over and under each other that it hardly mattered.

Then the whole troop was all over him, touching, pinching, prodding, their heavy smell filling his nostrils. His clothing fascinated them; they kept running their fingers over the sueded leather. At first they seemed to think it part of him, but then they discovered his tunic could be unbuttoned, his trousers lowered.

The sims pointed and hooted at the relatively hairless skin they had exposed. Kenton felt a horrid stab of fear as they poked at his privates, but the examination, though rough, was not malicious. And with his bladder full to bursting, it was a relief to void himself without having to foul his trousers.

The sims also kept patting his forehead, the chief bodily difference between them and him. From their incredulous grins, they found it funny. They had obviously never seen a man before. He suspected the hunting band's curiosity was all that had saved his life back in the clearing.

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"I'm not your enemy," he said, and gave the grunted greeting-call wild sims of the same troop used with one another back in Virginia. They understood it; he saw puzzlement on their heavy features that he, so plainly alien, should mimic the snort they used among themselves.

For a moment, he thought they might loose his bonds. But he was too strange for that, whether or not he knew their calls. And then the sim who had been carrying his belt began opening the pouches and powderhorn tht hung from it, which proved interesting enough to distract a good part of the troop from his person.

The fine black grains of gunpowder made the sims sneeze; some tasted the stuff, and made faces at the result. The scout hoped they would toss the powderhorn into the fire. The blast might scare them away long enough for him to get free. Of course, after a pound of gunpowder went off close by, he might not be in any condition to try. Given his present predicament, though, he was willing to take the risk.

The sims poured the powder out onto the ground, scotching that chance.

His tin water-jar enthralled them a good deal more. Like his belt, it was an idea they had not thought of. One rushed over to a tiny creek a few hundred yards away, filled the jar, and brought it back.

The sim that had bound the stone to the vine belt suddenly snatched up the powderhorn. It hurried to the streamlet and filled the powderhorn with water. Adapting a tool from one use to another showed quicker wit than most sims could boast.

They came to his shot-pouch next. The bullets cascaded out. As soon as the sims discovered they were not some queer find of fruit, their youngsters pounced on the musket balls, which made toys unlike the sticks, leaves, and stones they had known before.

The older sims went on exploring the scout's gear. He ground his teeth as they opened the leather bag that held the canines of the spearfangs he had killed. The sims recognized the fangs at once. Surprised hoots rose. The sims stared wide-eyed at Kenton, unable to imagine how he had slain so many of the big cats.

Last of all, the sims pulled his knife from its sheath. The only sharp edges they knew were the ones they laboriously chipped and flaked onto stone. They did not recognize the gleaming steel blade as something similar until one of them closed her hand round it. She shrieked at the unexpected pain, gaped to see blood streaming down her fingers.

One of the males seized the knife then—by the hilt, more through luck than design. The sim brandished the weapon wildly, then suddenly stopped, realizing what is was for. Again Kenton fought panic; men likely would have tested the blade on his flesh.

But sims had minds more strictly utilitarian. The male squatted in front of one of the joints of meat the hunting party had brought back. It screeched in pleasure at the ease with which the knife slid through the flesh. Another sim stuck the carved-off gobbet on a stick and held it over the fire.

The first smell of roasting meat made most of the sims forget about Kenton.

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They armed themselves with sticks and dashed over to the butcher, who, grinning, was cutting chunk after chunk from the doe's hindquarter. The males jostled round the fire; such a feast did not often come their way. Females and youngsters beseechingly held out their hands. With so much food, the males were generous in sharing.

The wind had shifted till it came out of the west, filling the sky with clouds and blowing smoke from the fire straight into Kenton's face. It made him cough and his eyes water. Mixed with it, though, was enough of the aroma of cookery to drive him nearly wild. He could hear his stomach growling above the racket the sims were making.

He loudly smacked his lips, a signal sims gave one another when they were hungry. The sims who heard him sent the same curious look they had when he imitated their greeting-call. But they did not feed him. Taking a captive was so unusual for them that they had no idea how to treat one. Any being outside their troop was not one of them, and so was entitled to nothing.

Things might have been worse, Kenton decided. Instead of begging for food, he could have *been* food. That the sims showed no signs of moving in that direction was mildly heartening, enough at any rate to help him resist his hunger pangs.

He wondered what Charles was doing. By now Charles should long since have returned to their camp, and it was late enough for him to be wondering what had happened to Kenton.

He might, the scout decided, be clever enough to visit the salt lick; Kenton went there most often. The scout could not guess what Charles would do after that. He was used to the company of men—maybe he would try to go back to Virginia. Kenton wondered if the men at Portsmouth would believe his explanations, or kill him for doing away with his master. He hoped they would believe him; Charles deserved a better fate than disbelief would get him.

The sim might have a better chance here west of the mountains. He was an able hunter; he would have no trouble feeding himself. Eventually he should be able to find a home among the wild sims here, suspicious of all strangers though they were.

Charles would be able to show them so much that he could prove himself too valuable to exclude. Apart from the knife and hatchet he carried, he had learned a great deal in Virginia that wild sims were ignorant of. These sims, if they were like the ones along the Atlantic, would not know how to set snares. Something simple as the art of tying knots was unknown here. Charles might also be able to show them how to tan leather, which would give them footwear and many new tools.

All that would make the wild sims harder to push aside when English settlers began coming over the mountains. Kenton found he did not much care. He and Charles had been a team for years now; he could not find it in his heart to wish the sim anything but good, no matter what resulted afterward.

The wind was blowing harder now, bringing with it cool, moist air. It must have felt wonderful to the sims, who because of their thick hair suffered worse than men from the usual run of summer weather. That dislike of heat,

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though, did not keep them from feeding the fire with brances and dry shrubs whenever it began to get low.

The amount the sims could eat was astonishing. Because they spent so much time hungry, they were extravagantly able to make up for it when the chance came. They also let nothing go to waste, eating eyes, tongue, lungs from the carcasses and smashing big bones and sucking smaller ones to get every scrap of marrow.

At last, a sort of happy torpor came to the encampment. Females nursed their infants. Youngsters gradually lost interest in throwing Kenton's musketballs at each other and bedded down in nests of dry grass and leaves. Most of the adults followed them before long, singly or in pairs.

A few males stayed awake. One kept the fire going. Three more went to the edge of the clearing as sentries. One of those carried a club, another a couple of chipped stones. The third, a large, hulking sim, bore Kenton's rifle. It carried the gun by the muzzle end of the barrel, and swung it menacingly every minute or so, as if daring anything dangerous to come close.

The clever sim sat crosslegged by the fire not far from the scout. It stared down at the dagger it held in its lap. From time to time it would run a hand along its chinless jaw, the very image of studious concentration.

Kenton felt a touch of sympathy; the sim could study the knife till doomsday without learning how it was made. At that moment the sim looked his way. It shook its head, exactly as a frustrated man might: it was full of questions, and had no way to ask them.

Some of the wild Virginia sims had learned sign-speech from runaways, and used it among themselves, but it had not come over the mountains. The wild troops had so little contact with one another that ideas spread very slowly among them.

The sim picked up a stone chopper, took it in its left hand and the knife in its right. The crudeness of its own product next to the other must have infuriated it, for it suddenly scrambled to its feet and hurled the stone far into the night.

All three of the males standing watch whirled at the sound of the rejected tool landing in the bushes. The clever sim let out an apologetic hoot. The others relaxed.

The clever sim came over to glare at Kenton. The scout thought what a man would be feeling, confronted with skills and knowledge so far ahead of anything he possessed—and confronted with a being like and yet unlike himself. Sims were less imaginative than men, but surely some of that combination of anger, fear, and awe was on the subhuman's face.

Anger quickly came to predominate. Kenton uselessly tightened his muscles against the knifethrust he expected.

He hardly noticed the first raindrop that landed on his cheek, or the second. Even when a drop hit him in the eye, it only distracted him briefly from his fearful focus on the blade in the sim's hairy hand.

The sim shook its head in annoyance as the rain began. To it, too, the early sprinkles were but an irritation. Then, though, it forgot Kenton, forgot the knife it held. Its cry of alarm sent the

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rest of the troop bounding from their rest.

For a moment, Kenton wondered if the clever sim had gone mad. But soon he understood its concern, for the rain grew harder. The fire began to hiss as water poured down on it—and no wild sim could start a fire once it went out.

Because that was so, the sims had had to learn to keep their flames alive even in the face of rain. Some of the males held hides above the fire to shield it from the stone. Females dug ditches and built little dams of mud so that the water on the ground would not get the fuel wet.

Their efforts worked for a time. The sims with the hide shield coughed and choked on the smoke it trapped, but they did not leave their posts. The fire continued to crackle.

Kenton all but ignored it. His mouth was wide open, to catch as much of the rain as he could—the sims had given him no more water than food, and his throat felt raspy as a file. It took a while to get enough for each swallow, but every one was bliss.

The downpour grew heavier, the wind stronger. Soon it was blowing sheets of water almost horizontally. The sims' hide was less and less use. They wailed in dismay as the fire went out. Kenton could hardly hear them over the drumming of the rain. He was glad they had not dumped him face down; he might have drowned.

The storm lasted through the night, and only began to ease when light returned. Drenched, Kenton was relieved the rain was warm; had the cloudburst come, say, in fall, he would have been all too vulnerable to chest fever. He imagined it carried off many of the sims.

They huddled together, sodden and miserable, around their dead fire, their arms up to keep some of the rain from their faces. Now and then one would let out a mournful, keening cry that several others would echo. It reminded the scout eerily of a wake.

When the rain was finally done, the clever sim raked through the ashes, searching for hot coals that might be coaxed back to life. But the storm had been too strong; everything was soaked. As the sims saw they were indeed without the heat to cook their food and, in days to come, to keep them warm, they broke out in a fresh round of lamentation.

Kenton wondered if they would seek to have him restart the blaze. If that meant getting free of them, he would have done so in an instant. He would have offered, if they understood his speech or if he could have used his arms to gesture. But they did not even look his way; it did not occur to them that *anyone* could start a fire. His strangeness, and the curious tools he bore, were not enough to overcome that automatic assumption.

Slowly, morosely, the sims began to pick up the usual business of the camp. A grizzled male chipped away at a chunk of flint to shape a new hand-axe. Females dug roots with sticks and went into the nearby forest after early-ripening berries. Youngsters turned over rocks and popped whatever crawling things they found into their mouths.

A hunting party set out, armed with an assortment of wooden clubs and sharp stones. The sim with Kenton's

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musket apparently decided the long gun would be too clumsy to swing in tight quarters, for it exchanged the rifle for a stout bludgeon. The scout shook his head, relieved that the sim did not grasp what the musket could do.

The clever sim did not go with the band of hunting males. Its arms were filthy to the elbows from grubbing in the ruins of the fire. It kept staring at Kenton, as if he were a puzzle to be pieced together. When a couple of toddlers came over and prodded him, it bared its formidable teeth and shouted so fiercely that they tumbled backward in fright.

It came over and squatted by him; it made squelching sounds as it sat in the mud. "I am not your enemy," he said, as he had the night before.

It grunted. He thought it sought to converse with him, but his words meant nothing to it. Sims came to understand men's speech, but their own calls in the wild, even eked out by gestures, did not make up a language. The clever sim felt the lack, yet was powerless to remedy it. Had his arms been free, Kenton might have, but he needed dumb show to ask to be released, and could not use it until he had been. Contemplating that paradox led only to discomfiture.

If the sim and he could not converse, though, only one thing was likely to happen to him. No sims he knew kept captives, and the treatment he was getting here showed this troop to be no different. His flesh might not be so toothsome raw as roasted, but he did not think that would save him.

The way the clever sim was licking its lips now as it looked at him told him it had come to the same conclusion. The only reason he could find for its not killing him immediately was to keep his meat fresh for the hunting party when they came back. That did little to improve his spirits. He was getting thirsty again, too, and very hungry.

The day dragged on. The clever sims no longer bothered to keep the troop's youngsters away from Kenton. The small indignities they inflicted in their curiosity added to his misery. Still, human children would have done worse.

He heard a rustling in the woods, from the direction in which the hunters had gone. The old males who had been making tools gave the grunted greeting-noise. Kenton turned his head as the clever sim moved toward him, his knife in its hand. He expected the returning hunters would be the last thing he ever saw.

Then the old sim and several females cried out in alarm. The clever sim sucked in its breath in a harsh gasp. Coming into the clearing was none of the band of hunters—it was Charles instead.

Charles's eyes went wide when he saw Kenton lying tied in the mud by the drowned fire. He was too far away for the scout to read his expression clearly. Kenton wondered what was going through his mind, observing his master bound and helpless in the hands of his wild cousins. Was he tempted to throw in his lot with them? How could he help it, with the scout's vulnerability so displayed? Superior wit was not all that let men rule sims; their aura of might played no little role.

If Kenton's weakness gave Charles qualms, the sim from Virginia was as disturbing to the wild sims. The scout's

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clothes and possessions were strange to them, but so was he himself. But Charles was of their own kind, yet he too wore belt and buskins, and bore tools of the same alien sort as Kenton's.

The clever sim glanced from the knife he was holding to the one swinging at Charles's belt, and to the bright steel head of the hatchet Charles carried. The clever sim's face was the picture of bewilderment. Kenton could hardly blame it. It had seen its world turned upside down twice now in two days.

Raising the hatchet in a plain warning gesture, Charles advanced into the clearing. Females and young scurried away from him. He was more frightened than Kenton, and not just because he was free. The familiar turned bizarre is always harder to face than something wildly different.

Charles strode toward Kenton, the hatchet still held high. The scout spoke through lips dry from thirst and fear: "Good to see you again." He had all he could do to hold his voice steady. Nothing, he knew, might more quickly ingratiate Charles with the wild sims than slaughtering him.

Charles surveyed the encampment. The clever sim was the only male there of vigorous years. When it saw that Charles understood Kenton, it scowled fiercely and tightened its grip on the scout's knife.

Kenton had no choice but to wait to see what Charles would do. But Charles also seemed unsure, staring from the scout to the clever sim and back again. At last his left hand moved in a sign Kenton understood: *Trouble*.

"Trouble indeed," Kenton said, though he could not tell whether Charles meant the sign for him or it was simply the sim's equivalent of talking to himself. Daring to hope hurt, as an arm that has fallen asleep will tingle when the blood rushes in again.

Then Charles signed, *I help,* and squatted over him to cut his bonds. The clever sim shouted angrily and brandished the scout's knife. Charles shouted back, but drew away from Kenton. Had it just been the clever sim and he, the hatchet would have given him all the advantage he needed. But though none of the old males or juveniles was his match, together they could overwhelm him.

"Give them something to think about," Kenton exclaimed suddenly. "*The storm put out their fire—start it* again."

The way Charles's face lit was almost enough to kindle a blaze by itself. He deliberately turned his back on the clever sim, doing it with as much aplomb as any nobleman scoring off some rival. In spite of everything, Kenton could not help smiling; here was something unexpected Charles had learned in Virginia.

Charles knelt and took out his tinderbox. The scout heard him strike flint and steel together several times, saw him bend further to blow to life the sparks that had fallen on his tinder. Then, with a satisfied snort, he stepped away.

Because he had no dry fuel close by, he had made a pile of all the powdered bark and lint in the tinderbox. The little fire crackled briskly.

The wild sims stood transfixed, as if turned to stone. Then one of the old males hooted softly, the most nearly

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awed sound Kenton had ever heard from a sim's throat. The old male scrabbled through the remains of the dead fire for wood dry enough to burn. Having found a couple of sticks, it approached the blaze Charles had set, glancing to him as though for permission. When he did not object, it set the sticks on the fire. After a while, they caught.

Half a dozen wild sims dashed off after more fuel. The rest crowded toward the blaze, drawn to the flames like moths.

Not even the clever sim was immune to the fascination. This time it did not object when Charles stooped and began cutting Kenton's bonds.

The scout grimaced at the sting of returning circulation he had imagined a few minutes before. He clenched and unclenched his fingers and toes, trying to work feeling back into them. All the same, it was some minutes before he could stand. When he finally did, he had to clutch undignifiedly at his trousers; their sueded leather had stretched from the soaking it had taken.

He did not think he could get his knife back from the clever sim, but did go over to where the other male had discarded his musket. With his powder spilled and bullets scattered, he had only the one shot till he got back to his pack, but that was better than nothing. And the sim had been right, in its way—at need, the rifle would make a good club.

Kenton also gathered up the spear-fang canines, although to his annoyance one had disappeared in the mud. He had come by them through hard, dangerous hunting, and they represented wealth too great and too easily portable for him to abandon.

Though the scout hurried, Charles waited with barely concealed impatience. *We go?* he signed, adding the emphatic gesture to the questioning one.

"Indeed we do!" Kenton wanted to be as far from the encampment as he could when the hunting party returned.

The clever sim watched them withdraw. Its massive jaw muscles worked. The scout could all but taste its frustration. It had met beings and found tools and skills beyond any it could have imagined, and here, after but a brief moment, they were vanishing from its life again.

That proved more than it could bear. With a harsh cry, it rushed Kenton and Charles. The scout flung his musket to his shoulder, but hesitated with his finger still on the first trigger. The males in the hunting party had heard gunfire before; the sound of a shot would surely bring them at a run.

Charles had no such worries. His arm went back, then forward. The hatchet spun through the air. It buried itself in the clever sim's chest.

The clever sim shrieked. It wrenched the hatchet out, heedless of the blood that gushed from the wound. The clever sim flung the hatchet back at Charles, but its throw was wild. It staggered on rubbery legs, sat heavily. Kenton could hear how its breath bubbled in its throat.

The rest of the wild sims came out of their trance round the fire. They shouted and hooted. Hands groped for stones to throw. Saving his single bullet against desperate need, Kenton ran. Charles fled with him, stopping only to seize the hatchet from where it lay on the ground. Red streaked the gray steel blade.

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Kenton never found out whether the clever sim lived or died. He was everlastingly grateful it was the only robust male at the encampment. He and Charles outdistanced the gray-hairs and youngsters that tried to pursue them. They might not have had such good fortune if tested against the members of the hunting band, the more so as the scout's abused limbs could not carry him at full speed.

Kenton knew the troop's hunters would be expert trackers. They would have to be, living as they did from what they could run down. And so, no matter how urgently he wanted to put distance between himself and the camp, he and Charles did not neglect muddling their trail, doubling back on their tracks and splashing down streams so they would not leave footprints.

A large bullfrog sat on a half-submerged log, staring stupidly as Kenton and Charles drew near. Too late, it decided to leap away. The scout grabbed it and crushed its head against a stone, just as a wild sim might have done.

A bit further on, they came upon clumps of fresh-water mussels growing on some rocks. Charles used his knife and Kenton borrowed his hatchet to sever the byssi by which the shellfish moored themselves.

By then it was nearly dark. Neither of them knew the countryside well enough to head back toward the camp by night. They would have to shift camp anyway, Kenton realized; it was too close to the salt lick. The wild sims would surely scour that whole area in search of them. The scout hoped he could recover his pistols from the spot where he had killed the spearfang.

All that, though, could wait. Finding a hiding place for the night came first. A hollow with a rockpile down one side proved suitable, after Kenton stoned to death a fat rattling-snake that had been nesting among the rocks.

Fire? Charles signed.

The scout considered the lay of the land. "Yes," he said "a small one." If the wild sims came close enough to spot a tiny blaze by night, they would be on top of him anyway. And while he did not mind eating raw mussels, even hungry as he was he wanted to roast the frog and snake.

His stomach still growled when he was done with his share, but he felt better for it. He licked his fingers clean of grease and looked across the fire at Charles, who was still worrying tiny fragments of meat from a frogleg with his tongue.

In the dim, flickering red light, the sim's eyes were sunk in pits of shadow, unreadable. "Charles," Kenton began, and then stopped, unsure how—or whether—to go on.

Charles tossed the bones, by now quite naked, to one side. He gave a low-voiced, questioning hoot.

"I thank you," the scout said.

Charles grunted, a noncommittal sound.

Kenton almost let it rest there. His curiosity, though, was too great. Men had been trying to understand sims—and to see how close sims could come to understanding them—for close to two centuries. And so the scout asked, "Why did you decided to rescue me?"

The skin moved on Charles's brow-ridges; a man would have been wrinkling his forehead in concentration. *You,*

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I come here together, he signed. *We go back together*.

The scout wondered if that indeed was the whole answer. Because they were less imaginative than men, sims rigidly followed plans. Kenton had often talked about the return trip; perhaps Charles had simply been unable to conceive of anything else happening, and did as he did more for the picture of the future the scout had outlined than for Kenton's sake.

Kenton's lips twisted wryly; there was a thought to put him in his place. He persisted, "It would have been easier and less risky for you to join the wild sims."

He knew he was treading on dangerous ground. Back in Virginia, many sims fled to the wild troops that still lurked in the backwoods. There was always the risk of putting ideas in Charles's head that had not been there before.

The sim surprised him with an immediate gesture of rejection. *Not leave you*, Charles signed. *You, me, together, good. Years and years—not want end.*

"I thank you," Kenton said again. Had he followed the course of some colonists—who treated their sims as much like beasts as possible—he was sure he would have been shared among the wild sims in raw gobbets, with Charles likely joining the feast.

But the sim, to his surprise, was not done signing: *Not want to live with wild sims. Want to live with men. Wild sims boring*—an enormous yawn rendered that—*not know houses, not know music, not know knives, not know bread*. Charles sniffed with the same disdain a Portsmouth grandee would have shown on learning his daughter's prospective bridgegroom wore no shoes and shared a cabin with his mule.

Kenton burst out laughing. Charles snorted indignantly. The scout apologized, both in words and with the customary sim gesture: he smacked his lips loudly and spread his hands, meaning he had intended no harm. Charles accepted, once more with a lord's grace.

Inside, though, Kenton kept chuckling, though he was careful not to show it. He did not want to hurt Charles's feelings. But how on earth, he wondered, was he going to explain to Lord Emerson that Charles had saved him because his sim was a snob? ■

● Far better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to take rank with those poor spirits who neither enjoy nor suffer much, because they live in the gray twilight that knows not victory or defeat.

Theodore Roosevelt
April 10, 1899

Submitted by G. Harry Stine

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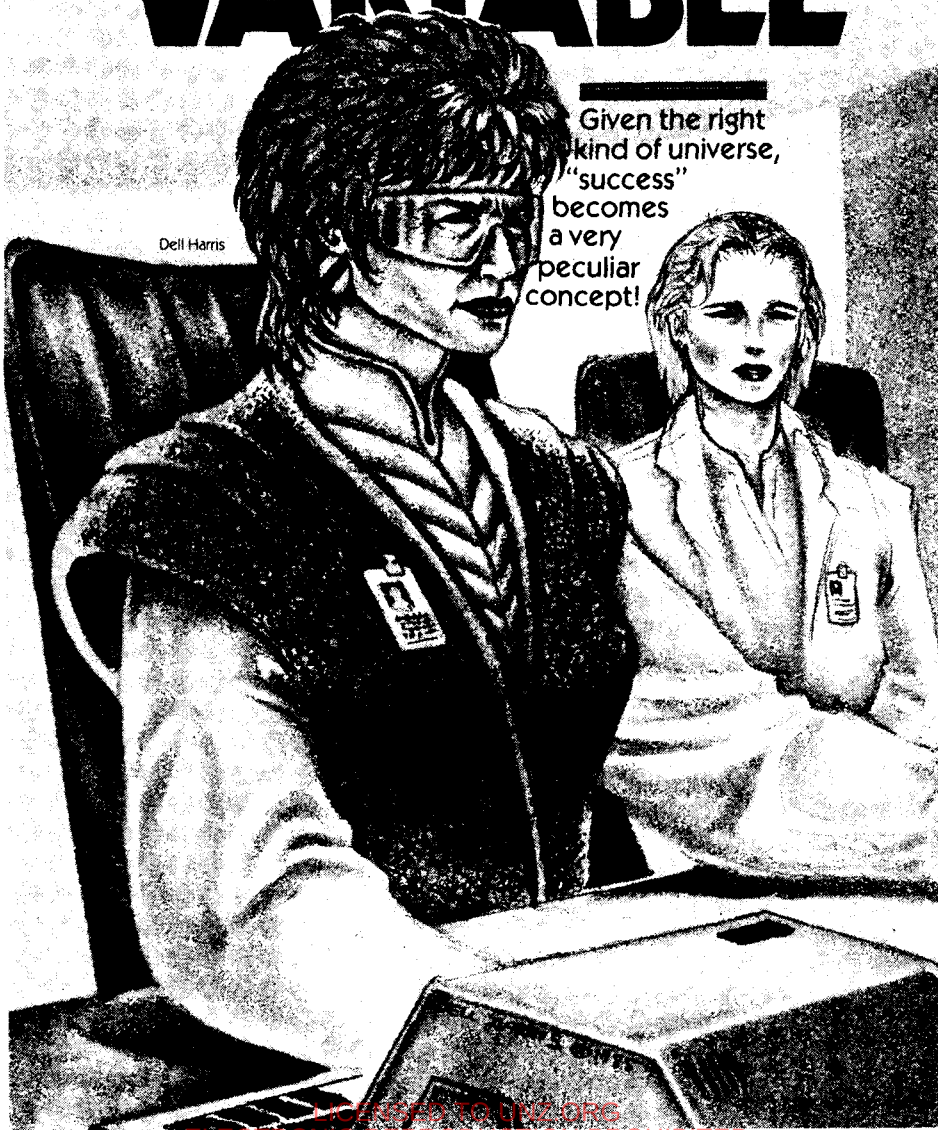
John Gribbin

RANDOM VARIABLE



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Whoever said that success breeds success didn't understand modern economics, thought Mackenzie. Since scientific budgets got so big, there was only one thing the accountants could do with a project that came to fruition on time and within budget—close it down quickly, and enter a nice black-ink credit in their ledgers, or whatever accountants used instead of ledgers these days. No, the thing that really bred success—in the form of increased budgets and staff—was failure. It had to be the right kind of failure, of course. Just tantalizing enough to hint at the prospect of a breakthrough in the not too distant future, if only a *little* more money could be forthcoming. Why, if the project were wound down after one tiny failure, there'd be nothing to show for all the megabucks spent so far, while just a few more megabucks could see everything to a happy conclusion.

Look at his own position. He'd barely been able to sell Diane Brookman the time machine project in the first place, and then he fouled the whole thing up by building something that turned out to work by disassembling his expensive intelligent probes into their constituent molecules and distributing those molecules across the spectrum of alternate probability universes. Did the Company blanch at the result? Did Ms. Brookman, the Director who, he was sure, not only ran the Company but actually owned a large chunk of it, dismiss him from her employ? Not a bit of it. In the face of earnest protestations that he had finished with time machines and planned to go back to a nice steady teaching job they had upped the ante, supplied him with a shiny new research lab discreetly housed in a pod attached to the main power satellite by a judiciously long umbilical (in case of accidents, you understand, Dr Mackenzie; we don't want any damage to the powersat, do we?) and given him not one but two postdoc physicists as assistants. What he needed, mused Mackenzie as he watched the smoke from his illicit cigar curl in the currents of the air conditioning system, was another failure. At this rate, he could end up with a whole satellite of his own.

"Uh, Dr Mackenzie." It was one of the postdocs—the brighter one, Christine Anderson. Her entry into his inner sanctum at the back of the lab sent the cigar smoke swirling into new patterns, and woke Mackenzie from his reverie.

"Yeah, Chris, it's me. Tell me the worst."

"Well, I guess it really is bad. I've been running the calculations on the big machine, and it just confirms what you thought. There's no practical way to make the thing work, even though the principle is OK—in theory, it ought to be possible to focus the effect down to single out one time path and send a probe back into the past—I mean, into one of the pasts." She half-smiled, apologetically. It was hard to get used to the idea that neither the past nor the future had a unique existence, but each consisted of an almost infinite array of different possible worlds, not parallel to each other, as the old science fiction writers had it, but *perpendicular* to each other, stretching each at right angles to all the others across an almost infinite array of quantum dimensions. Mackenzie doubted if she really believed the theory; he suspected she was humoring

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him for the sake of her salary. Well, at least she was bright enough to humour him, not like that idiot Logie, who seemed incapable of understanding the reality of quantum multiplicity, and kept trying to persuade his boss of the error of his ways. Well, he was in good company. Einstein never believed it, and went to his grave thinking there must be an undiscovered clockwork that kept the Universe running smoothly. "I cannot believe that God plays dice," he responded to the quantum theorists who told him the Universe was simply the sum of many random processes.

What was it Hawking had said, decades later when the theory had been proved beyond all doubt? "God not only plays dice, he sometimes throws them where they cannot be seen." Mackenzie had never been quite sure what that meant. But you had to admit it sounded good.

"That's fine. It's time for another failure. A few more, and I'll be ready to take over the world." She looked from him to the cigar and back again, clearly wondering just what it was he was smoking. "But how do the detailed figures come out? What odds are we up against?"

"It's quite hopeless. At least several million to one. If you hit the calibration just right, then the system ought to work. Just a hair off, and either nothing at all happens or, if you've overshot, the whole lab disappears into the Beast." She nodded toward the center of the lab where, carefully shielded and surrounded by the bulk of their equipment, lurked the mini black hole that was the heart of Mackenzie's time machine.

"But what about the powersat? Would we take that with us?"

"Oh no. It's quite safe—the field won't extend out more than 20 meters. We've a whole factor of ten in hand. But you can't really be planning to do it." Her voice suddenly expressed concern, as she saw where his questions were leading. "If you try a random probe on automatic while we sit in the powersat it's virtually certain you'll lose the system."

"Indeed. Another failure to blot my copybook." He smile warmly, and stirred into action. "Come on, Chris, we've got work to do. First, a little light programming. Then I'm sending you on an errand to our benefactors."

When the lab collapsed into the black hole, there were no spectacular pyrotechnic displays to alert the populace of Earth. That's the nature of black holes. Everything goes in, nothing comes out. All the pyrotechnics are inside. Of course, the alarm boards on the powersat lit up in spectacular fashion, but the umbilical was self-sealing, designed for just such an emergency, and no real harm was done. Fourteen light years away, on a planet circling a dim star in the direction of the constellation Pisces, the pulse of gravitational radiation from the collapse was eventually detected by a group of beings searching for signs of intelligent life in the Universe. But since they never detected another pulse, they decided it couldn't be an intelligent signal, and gave up the search. But that is another story.

On Earth, the news, traveling only slightly less quickly than the gravitational pulse, reached Diane Brookman

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a few minutes before Christine arrived in her capacity as Mackenzie's messenger. His timing was perfect, even if the experiment had failed.

"I hope you can explain this, Dr Anderson. It seems that Dr Mackenzie has excelled himself this time. He seems to have fallen into the Beast, and taken the most expensive project this planet has ever seen in with him."

"Dan too?" Anderson's surprise was genuine. "Please, may I sit down? I expected something—but not this." She took the offered seat, and fumbled in her case for her computer. "Here, take this. There's a message for you, but it's blocked. I haven't read it, he said it has to be interfaced with your desk."

Diane took the machine and looked at it. He must have known what he was doing—a last message from the man who had cost the Company more than it could really afford, resources squandered, it now seemed, on a gamble on which her reputation rode as well. It had better be good; she needed something positive to take to the emergency meeting of the Board. She slid the computer into the desk interface and watched as Mackenzie's image appeared on the desk screen.

"Hi there, Ms. Brookman. By the time you see this, the chances are about eight million to one that I'm dead. So the first thing I want to say is that Christine Anderson knew nothing about any of this, and that if you are looking for a successor to head up your special projects division, she is certainly the best candidate." More likely, thought Diane, they'll be looking for a successor for *me*. "Of course, if by some miracle I am still around, then let me assure you that the project is a complete success, and that I won't be needing a successor in the foreseeable future. After all, nothing succeeds like success, and if we've come up with the goods then I know you'll forgive my little indiscretions. But let me tell you just what they involve.

"Christine can give you all the details. But basically we were faced with one big problem. From our earlier tests—the original failures that encouraged you to go ahead with the big project," Diane winced, but the holo image continued unperturbed, "we learned that the Universe really does split into many copies of itself every time it is faced with a choice at the quantum level. Anything that possibly *can* happen *does* happen, in one of the alternate probability worlds. But these aren't the parallel worlds the old science fiction writers were so fond of. They are all perpendicular worlds, every one at right angles to all the others, in an array of infinite dimensions." The image of Mackenzie paused and gazed dreamily for a moment out past the recording camera. Few ordinary people could imagine four or five dimensions, let alone an infinite array. But Mackenzie was one of those mathematicians who happily contemplated infinity.

The eyes of his recorded image focused once again, as if he were looking straight at the viewer. "That's all old stuff. We found we could make a time machine, but when we tried to send it forward or backward in time it got sieved—broken apart into its constituent molecules with bits being squirted out into every available perpendicular world. The theory said we ought to be able to

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focus the time field to get the machine to run up one of these branches of reality and back again, but to do that we needed to calibrate the field generator. We couldn't calibrate our machine without a trial run, and we couldn't have a trial run without calibration. Christine and I are both pretty sure that the focusing problem is solved in principle, and that we can focus the time field onto one probability world out of the quantum array. But the focusing takes a lot of energy, and it has to be applied in just the right place, and time. I won't bore you with the math; like I say, Christine has it all. What it says in everyday terms is that either of three things could happen. First, the focus isn't fine enough. That's OK. Just like in our earlier tests, the intelligent probe gets shoved through the time sieve in little pieces and scattered across probabilities. No harm done, except to the probe." And to our budget, winced Diane. Every time he fired up that damn machine it took the whole of the powersat output and they had to switch in standby power from the Indian Ocean satellite.

"Secondly," continued Mackenzie's image, serenely confident of a captive audience, "we might hit the focus just right. The probe works, we have a practical time machine, and everyone is happy. Or, of course, we might get the focus too fine. All that power with nowhere to go, except into the Beast itself. Christine tells me it would take the whole lab with it, but leave the powersat behind. I hope she's right; I'd hate you to lose the powersat too. Because, you see, the odds are eight million and a bit to one against getting the calibration right first time. There's about a fifty-fifty chance of either nothing happening or the whole thing going blooey, with that one in whatever it is chance of success somewhere in the middle of the calibration range.

"There's absolutely no way to calculate the precise tuning constant. It's like the constant of gravity—there has to *be* a constant, but the laws of physics don't tell you exactly what size it is. You just have to suck it and see. And that's what I'm just going to do—have done, by the time this reaches you." The image paused and lit a cigar.

"I wonder of you've sussed it out yet—Christine ought to, if she's going to be any good as my successor.

"The thing is, you have to really *believe* in the alternate worlds. Remember Everett's theory. Every time the Universe is faced with a choice of possibilities at the quantum level, *every* possibility becomes reality. The Universe divides into as many copies as are needed to create worlds in which each possible option is taken up once. So if I set up the Beast here to pick the fine tuning constant at random from the whatever many million possibilities there are, the Universe will promptly divide into exactly that many million different universes. In about half of them, the machine goes blooey. In about half of them, nothing happens. And in one of them I'm sitting pretty, because it worked perfectly.

"So that's what I've done. With one refinement. I don't fancy facing you if nothing at all happens, so I've set the machine to keep picking random numbers until either it goes blooey or it strikes lucky. That way, the way I calculate it, we end up with about seven

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universes in which I'm successful, and eight million odd in which you've just lost the lab, but I'm not around to take my punishment. It should take just over a microsecond to complete the job, so I won't have time for any second thoughts.''

The image faded, and Diane turned to Christine. ''Was he serious?''

''I never really thought . . . Oh yes, Director, he was serious. I always knew he really believed all that stuff about alternative realities. But who would have thought of such a crazy scheme? Eight million suicides for the sake of getting the experiment right—and I'm certainly not sure that *I* have that much faith in Everett's theory. You know Dr Mackenzie was out on a limb in the scientific community, don't you? Most of them still hold to Max Born's interpretation—when faced with a quantum choice, the Universe selects one probability from the array and makes it real. Maybe that was just Russian roulette, with all the chambers except one loaded. . . .''

''You said 'they' stand by the Born interpretation, Christine. Don't you?''

''I'm not sure. I did. I thought Mackenzie was, well, eccentric. But not crazy; certainly not suicidal. And a whole lot more clever than anyone else I've met. He's certainly gone from *this* world. And if he was right, then there are eight million of me and eight million of you all puzzling over just where he's gone. But there just might be seven of him each with a working, calibrated time machine. It isn't something I would ever do, but then, people are different. Someone can always be found to volunteer for any crazy scheme, if the potential rewards are great enough.''

''The random variable,'' Diane murmured. ''No, I'm not talking about your machine, Dr Anderson. Human nature is the real unknown. That's what makes my job so interesting—and unpredictable. I think a politican, or a psychologist, might understand what's just happened better than a physicist. But we'll have to pick up the pieces as best we can.

''You do realize Mackenzie was right about one thing, don't you? The only hope I've got of hanging on to my position here is to convince the Board that what just happened out there was a success. And that means you are in line for the job of picking up the pieces and making that damned machine work. After all, Christine,'' she smiled humorlessly, ''if Mackenzie was right, he's out there, somewhere, with a working, calibrated time machine. You have to believe in such confidence. Don't you?'' ■

● It is because nations tend to stupidity and baseness that mankind moves so slowly; it is because individuals have a capacity for better things that it moves at all.

George Gissing

Submitted by G. Harry Stine

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on gaming

Dana Lombardy

If you enjoy computer games, or if you're an SF reader who's curious about such games and would like to try them, Telarium Corporation has several interesting titles, including three I tested for this review: *Dragonworld,* based on the book by Byron Preiss, Michael Reaves, and Joseph Zucker; *Rendezvous with Rama,* based on the novel by Arthur C. Clarke; and *Fahrenheit 451,* based on the story by Ray Bradbury (prices vary; these games should all be available where computer games are sold, but if you have trouble locating them, write to P.O. Box 1327, Cambridge, MA 02238).

All three games work in the same manner. You are shown a series of three pictures (video graphics) at the top of the computer screen, with text below the pictures explaining the situation at that point in the game. You must then type in your instructions in response to the situation, such as "run away" (a maneuver I use when in doubt), or "go west," or "use sword," etc. The computer screen then changes to the next set of pictures and text, based on your typed instructions. This system of give-and-take between you and the computer continues until your character is killed or incapacitated, or you accomplish your mission.

The video graphics in these games are better than is found in many computer games. At appropriate times, there is also background music accompanying the text and graphics. The net effect is quite good, giving you the "feel" of the story and helping to immerse you—you can "get into" these games in the same manner as you would "get into" the original novels.

One of the tests I like to try on computer games is to see how they handle player stupidity. That is, I deliberately do stupid things to try and get my character killed as soon as possible. Of the three, *Fahrenheit 451* punishes you the worst. It took almost no time at all for my character to be killed.

Dragonworld took somewhat longer before I could get my character killed, and it also had an interesting bit of humor you may not discover unless you're testing the game the way I did. One of the stupid manuevers I attempted was to try and kill the good king I had come to see and ask for help. Instead of being stopped in the usual manner (killed or thrown in the dungeon), one of the other characters in the game slapped me and told me to stop fooling around!

Rendezvous with Rama was the "safest" of the three games. When I tried to exit the spaceship from an airlock (without my life-support suit on), the computer wouldn't let me leave the ship. The significance of these danger-level tests is that if you're an experienced gamer you'll probably find *Fahrenheit 451* the most challenging from an action standpoint. If you're a beginner, *Rama* or *Dragonworld* would be

(continued on page 129)

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The Alternate View

SYSTEM SHENANIGANS

G. Harry Stine

"You can get away with *anything* —provided you move faster than the system can react and then either leave the system immediately thereafter or change the system so that it can't react."

A brilliant generalist, the late Dr. William Osborn Davis, told me this a quarter of a century ago.

The logic derives from Davis's observation, "A system cannot be changed in zero time." From this one can derive the logical postulate that every system from the subnuclear particle to the universe has a built-in reaction time, a period during which it cannot respond as a whole to any change.

In short, there must be a minimum period of time in which the smallest particle in the universe cannot respond as a whole. Q.E.D.: Time must be quantized. When Davis worked out the numbers on the basis of the electron, this came out to be 10^{-23} seconds. When it comes to the universe, the system delay time depends upon whether you want to talk about a closed system, an oscillating system, or a hyperbolic system. Regardless, the time delay is so long that by the time the universe figures out what we, the human race, are doing, and reacts, we'll be doing something else if we're smart. (And we'd better be smart.) True, this goes against the Second Law of Thermodynamics. But a lot of things do, like life itself.

It seems pretty obvious that any system has its delay time, its "critical action time," in less than which it cannot react as a whole to any suddenly applied change.

This is true not only in physical systems, but also in social systems.

For example, here's an obvious one that's used all the time by most banks and financial institutions—not necessarily as openly as exemplified—and by a lot of science fiction authors (and editors). You can write a check for more than the balance of the checking account as long as you know in advance what the delay will be between the time you write the check and the time it gets posted against your account. This is also known as "working the float." And it's the reason why most banks in the wide-open American west own fleets of fast airplanes that spend every night speeding through the skies carrying pieces of paper from branch banks to headquarters.

To go a step further—some entrepreneurs have done so, but only a few have been caught—you can take $100,000 out of the till the day after the accountants, bank examiners, etc. have completed their audits, stick the money in an aggressive 18% investment scheme, pull the money back out and re-deposit it one day before the auditors return for their next inspection, and personally pocket all the interest. Nobody knows the money has been missing. It's there at both audits. Therefore, it hasn't really been gone, has it? On the other hand,

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you've made 18% on that money. Was theft involved? Was a crime committed? Or were you just playing "system shenanigans"?

I asked my banker the other day. I see my banker often. An author has to when writing for *Analog* word rates. We got to talking about this and that, as is our wont, and the matter came up in passing. He pointed out that this was one of the reasons why some banks want electronic funds transfer; it reduces the critical action time of the system. Other banks don't want it; they make a lot of money on the float. Especially the international banks where it's part of something called *arbitrage,* which you should look up in the dictionary to find out what it means. You might be amazed, surprised, and astounded.

The critical action time of a system is one of the reasons why the economists are continually in such a muddle. We operate in a very large and extremely complex economic system with lots and *lots* of variables. It's difficult if not impossible to pin down all the variables, much less the basic operational modes of the system itself. And until you've got a handle on all the variables, you cannot write a valid mathematical model of any system, whether it be the atom or the economy of the United States. You can spend years writing the mathematical model of the U.S. economy. When you finally get it, it's wrong because the system has changed in the meantime.

In aviation, we'd use the term "behind the power curve." This is a situation some pilots find themselves in when airspeed gets low; flight is maintained where drag-due-to-lift is great (high induced drag), and you haven't got enough engine power to get you out of it. And the aircraft sinks slowly in the west, finally encountering the earth-air interface with its infinite drag coefficient.

The universe behaves classically as the universe *ought* to—i.e., the Second Law of Thermodynamics and all of the Newtonian laws work perfectly—when you operate in times greater than the critical action time of the system.

When you begin to work in less than the critical action time of the system, you can expect to run into things like quantum mechanics. Or worse.

Which leads to the fascinating speculation: What happens to a system when you attempt to put energy into it faster than the critical action time of the system—i.e., faster than the system can accept and/or absorb it?

I already know what happens when dealing with the electromagnetic spectrum. It's spelled out in Maxwell's Equations. You get electromagnetic radiation. That is to say, energy that cannot be accepted by the system must be gotten rid of in the easiest possible manner. Radiation is merely a concept to explain the difference between energy in, and energy apparently retained by, the system.

And I know what happens in a fluid medium when one adds energy to a fluid in terms of velocity of an object through it. At very low speeds, everything is nicely linear, and all the energy is accounted for neatly in the laminar boundary layer between the moving object and the fluid. Go a little faster, and the en-

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ergy input becomes too rapid for the object-fluid system; so the energy goes into a turbulent boundary layer. Go even faster up to the point where you exceed the message transmission time in the system, and you've got a shock wave.

Shock waves aren't just something aerodynamicists see in Schlieren photographs made with supersonic wind tunnels. I've seen them twice while riding in commercial jet aircraft—most recently in a MacDonnell-Douglas DC-9-80 (or "MD-80" if you want to believe the latest doublethink from the MacDac PR department). Sun angle was just right. Aircraft course was just right. Both conspired to cast a shadow of the normal shock on the wing surface. I watched two shock waves—one just aft of the leading edge, the other running spanwise at about mid-chord. They weren't stationary; they vibrated back and forth about 12 chordwise inches. No wonder aerodynamic flutter is such a nut-breaking problem!

When nuclear physicists use a huge particle accelerator to slam particles into a target at extremely high energy levels (and therefore velocity), the results include an enormous amount of garbage that sprays around all over the place. These tracks in the bubble chamber photographs, we are told, represent various particles with varying amounts of charge, spin, color, gender, taste, odor, virility, charm, sexiness, *ad infinitum* as physicists struggle to account for all the energy in versus energy out. When these two don't balance, wondrous new particles are invented. I'm wondering if we're really seeing new particles or just energy that (a) has to leave the system quickly because it's being introduced into the system faster than the system can accept it, and (b) has to leave the system *later* because a corollary might say that a system can release energy only at a maximum rate and no faster, thereby relegating some of the excess energy into a state that might be termed "virtual energy"—i.e., energy that has been introduced into the system faster than the system can either accept or reject it and therefore is somehow stored by the system as "virtual energy" which is just as real and just as amenable to manipulation as the virtual image in an optical system.

However, the point I'm trying to make here is that *any* system has its critical action time. If you know what it is, you can make that system do what you want it to do.

But you've got to get out of the system before it reacts, or it will clobber you with the reaction.

Or you can change the system itself while you're doing things in less than its critical action time. If you do this right, you can change the system so that it doesn't react at all and so that it doesn't even know it's been changed. After all, you've changed it in less time than it has to recognize the change.

This latter is the world's most successful way to stage a *coup d'état* or a revolution.

But if you don't know the critical action time of that system and move in such a way that it can react, you'll swing from the gallows if you don't get out of the country *toute de suite*.

These are only a few examples of the "critical action time" hypothesis. They may seem sophomoric. But I don't think they negate anything we already know

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to be true about the universe. And they seem to work, regardless of the system. For a long time, I've said that maybe modern physics might not seem to be Alice In Wonderland if we looked at the data a little bit differently. This is an example of what I meant.

Have you had any system critical action time experiences or hypotheses, too? ■

ON GAMING

(continued from page 125)

better starting games since an error is not as costly in these two games as it would be in *451*.

If you're unfamiliar with the original stories, a brief summary of each with respect to what's in the game follows.

In *Dragonworld,* you are Amsel of Fandora and are telepathically summoned by means of a mystical object called the Dragonpearl to aid The Last Dragon. You had once before saved this dragon with the aid of your friend Hawkwind, leader of the nation of Simbala. The Last Dragon has been drugged and kidnapped by the Duke of Darkness and is being held somewhere in the southland of Simbala. You must sail to Simbala and enlist Hawkwind's assistance to find and save your old friend.

In *Rendezvous with Rama*, it's the year 2130, and a huge new asteroid is discovered and quickly dubbed "Rama." But it's soon determined that it's actually an alien spaceship of immense proportions. Within this gargantuan cylinder is a world of plains, forests, cities, even a large sea, all held in place by a gravitational effect caused by centrifugal force as Rama constantly spins through space. But the cities seem uninhabited, the world seems unused, and Rama presents the people of Earth with several questions.

Where did it come from? It was tracked long before entering our solar system, but its place of origin is unknown. What is its purpose? Is it benign or malevolent? Or is it dead, its inhabitants all killed by malfunction or miscalculation during its voyage?

You are the commander of the exploration ship Endeavor, and it's your mission to find the answers to these questions, if, in fact, there are answers to them. But you haven't much time. Rama is headed straight for our sun and if you stay too long with the alien ship, you and your crew will die.

Fahrenheit 451 is set in a not-too-distant future where books are outlawed. Firemen don't put out fires here, they start them to burn books. Books are dangerous. They create tension and disruption among the citizenry, so they must be eliminated. But one Fireman's curiosity overcomes him. He saves and reads a book and discovers a passion for this forbidden fruit. Soon his crime is discovered and he becomes a fugitive, fleeing New York City to enter the wilderness. There he finds others who share his illegal passion and who keep literature alive by memorizing entire books to recite to others. When the repressive society within the city is overthrown, this Underground will offer the only hope for restoration of the literary classics.

If you want more active participation in a novel than just reading it, take a look at these Telarium computer games. They offer a new dimension to some old favorites. ■

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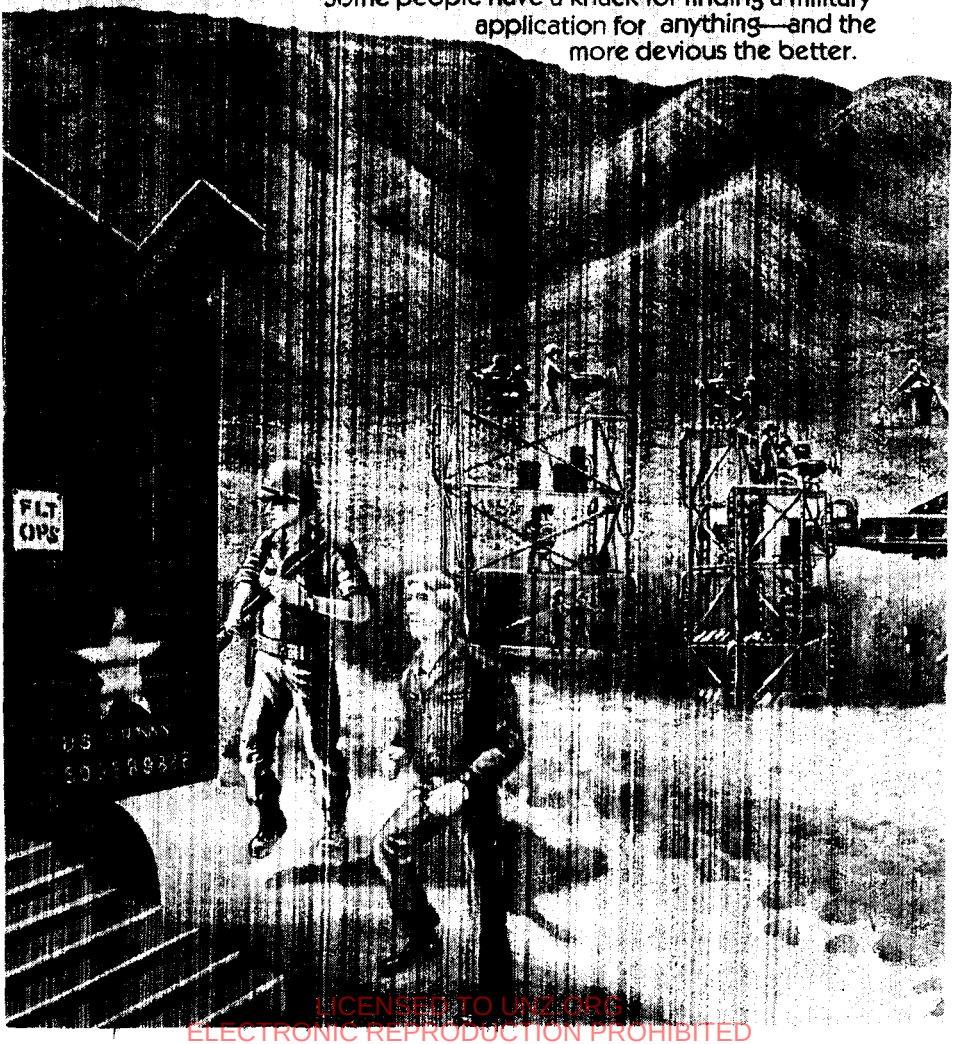
Part Two of Four

THE COMING OF THE QUANTUM CATS

Frederik Pohl

Some people have a knack for finding a military application for anything—and the more devious the better.



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It is customary to print a disclaimer in novels, saying that the characters are fictitious and no resemblance to any real person, living or dead, is intended. This is, in the case of this story, wholly true, in spite of the fact that some of the characters have names made famous by position and deeds. The reason is that, in each case, the characters portrayed are what the real-life characters might have been . . . if they had been someone other than the persons they were.

SYNOPSIS

My name is **Dominic DeSota.** *People usually call me* **Nicky** *for short. I've got a good job as a mortgage broker; and I've got a good-looking girlfriend, who is a stewardess on the high-speed trains, and all in all the summer of 1983 was a really good time for me, right up until the time I unhooked the top of my bathing suit and was arrested by the F.B.I. for going topless.*

At least, that's what I thought it was. It turned out worse than that. They said I'd been seen sneaking around the super- secret research installation of **Daleylab,** *and they had photographs and fingerprints to prove it.*

Well, that was crazy! I'd never been near the place. I didn't even know what they did there—some people said they were trying to invent an atomic bomb. Others said they were building some kind of rocket ship that would actually go out into space. Some even said they were inventing something called "television." I didn't believe any of that junk. I did believe, though, that Daleylab was off limits to anybody not cleared by the Arabs or a recognized

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religious institution, and the last thing in the world I would have wanted to do was to get in trouble with them.

Nevertheless, they had those photographs and prints. The head F.B.I. agent was a woman named **Nyla Christophe.** *She was a terror. Her thumbs had been amputated, which meant that she'd been caught at some serious crime like shoplifting or selling liquor to someone under the age of 35, and how a person like that got into the F.B.I. I couldn't imagine. But there she was, and she had me under arrest.*

Fortunately, I had witnesses who swore that I was somewhere else at the time the surveillance camera took those pictures. Nyla Christophe made my life miserable for a while, but she finally let me go.

Then my troubles really began.

A shady figure named **Larry Douglas** *turned up. He offered to help me by taking me to meet an old retired movie actor, one of those flaming liberals from the old days; he'd been blacklisted by the films for union activity and retired to his home in Dixon, Illinois. About all I knew about Douglas was that he claimed to be the grandson of some old Russian revolutionary named Djugashvili or Stalin or something who'd come to America when the revolution fizzled and started a successful men's-wear furnishings business in New York. I went along with him, though. I had dinner with this old couple, Ronnie and Jane. I didn't really expect much help from them. Who would listen to a has-been movie actor? But I didn't get really suspicious until I began to think that Douglas wasn't particularly interested in me, he was just trying to trap old Ronnie into making some sort of anti-Arab or irreligious remarks. I wondered what he was up to. . . .*

I found out, all right. Douglas was some kind of stoolie for F.B.I. Agent Nyla Christophe, and the way I found out for sure was that when I went to meet my girlfriend at the train station, the F.B.I. arrested me again. Not only me. They picked up the whole crew of the Twentieth Century Limited, my girlfriend Greta included, and this time they didn't intend to let any of us go.

And meanwhile. . . .

My name is also Dominic DeSota, but nobody calls me Nicky. They call me **Dom** *if they know me well enough, but most of the people I meet call me Senator. That's what I am, a U.S. Senator from the State of Illinois and, I think I can say, a fairly important one. I'm on friendly terms with President Reagan, even though we're not of the same party. In fact, I'm even friendly with her husband, Ronnie, the First Gentleman. I was a happy man then, in August of 1983. I had everything going for me, including a love affair with the most beautiful, and maybe the best, concert violinist in the world,* **Nyla Christophe Bowquist.** *(It was a problem that we were both married to other people, but nowhere near enough of a problem for me to think of ever giving her up.) Because Nyla was on the road so much, giving concerts, our time together was limited. But what we had we loved—not only for each other, but for our circle of friends in Washington, like good old Jack Kennedy, my fellow Senator, and his wife Jacqueline, and the Russian ambassador, Lavrenti Djugashvili. They*

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must have suspected what was between Nyla and me, but they never hinted at it. They may not even have gossiped about it behind our backs, because there was never any scandal.

It was a nasty shock when I got a phone call to say that "I"—they swore it was I—had been seen in the Cathouse at Sandia National Laboratories in New Mexico.

See, Sandia was secret in itself, because all sorts of research went on there. The Cathouse was the most secret of all.

Hardly anybody knew about the Cathouse. Even most Senators didn't—except a few people like me, because we were on the oversight committee that was in charge of all secret defense work. You see, there were some scientists who thought that there were an infinite number of parallel worlds, similar to our own, but differing in detail—say, in one of them the American Revolution never occurred and we were still subjects of the Queen; in another, a meteorite had wiped out the human race; in another organic life had never evolved at all on Earth—well, there were an infinite number of possibilities; and also an infinite number (they supposed) of "paratime" worlds. Of course, there was no real evidence of this. There was only mathematics. But the mathematics made them believe that this was so, and that it might even be possible to peep into, perhaps to travel into, such paratime worlds.

All this has to do with what they call "quantum mechanics" and they tried to explain it to us ignorant Senators by quoting a man named Schroedinger. He is supposed to have said something like, "Suppose you have a sealed box with a cat inside it. The cat is either living or dead, but you can't know which until you open the box—so the best you can say, before opening it, is that there is a fifty-fifty chance of the cat's being alive. But a cat can't be fifty percent alive. It has to be one or the other. And what this really means," Schroedinger is supposed to have said, "is that it is both *alive and dead—but in two separate universes."*

I can't say we really understood that, but the military implications were obvious, if it were true, and besides it was a really cheap project to run. So we authorized it; and we named the place where that particular research was done after Schroedinger's cat, the Cathouse.

It was there that "I" had been caught.

Naturally, I flew out there at once. I confronted myself, and by God it was *myself—same retina prints, same bone structure, in every testable way this man who called himself* **Dr. Dominic P. DeSota** *was me. But he wouldn't talk. He wouldn't say how he was there, or why; and just when I was beginning to wonder if we shouldn't go against all my principles and use some kind of force to make him talk, he disappeared.*

But that wasn't the end of it.

On my way out of the building we were surprised by a squad of soldiers. Their commander was another me, this one wearing a major's gold leaves on his battle dress; and he took us prisoner. The United States, he told us, was being invaded—by the United States; and if we knew what was good for us we would surrender.

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* * *

23 August 1983

9:10 P.M. Mrs. Nyla Christophe Bowquist.

It was really disappointing to be in Dom's home town without Dom there, but I kept busy. There's always plenty to do getting ready for a concert. There are press interviews. There are cocktails before the performance, mixing with the heavy donors to the National Symphony. Most of all, there are rehearsals. Ten minutes of rehearsal with the orchestra uses up an hour of my time—worrying about it beforehand, trying to remember all the cuts and tempi and intonations we'd agreed on afterward. One would think that rehearsing with Mstislav Rostropovich ought to be easier than most, because Slavi started out as a cellist himself. Not a bit of it. He is an endless fusser. He can drive you crazy fidgeting over the dynamics for one oboe, or the exact number of microseconds a note should be syncopated. I don't mean that I don't like working with him. He has a wonderful sense of humor, for instance. In fact, I love the man.

I'll give you an idea of the kind of gentle joke I get from Slavi Rostropovich. When I'd signed and returned the contract for this performance, his concert-master called up and said, "Slavi says you can have a choice, Nyla. The Sibelius or the Mendelssohn, which?" I couldn't help giggling.

It was the kind of joke that you have to have been around for a while to laugh at. It had a history. The previous time I played the National Symphony a newspaper feature writer caught me off guard. I guess I was tired. Anyway, I told her what violinists don't often talk about, but what every fiddle-player since Paganini has known. There are concerti that are crowd-pleasers because they sound a lot harder to play than they are—like the Mendelssohn—and concerti that are tests of skill because they are a lot harder than they sound—like the Sibelius. So I told this woman that when I wanted to win cheap bravos from an unsophisticated audience I'd play the Mendelssohn, and if I wanted to show off for my colleagues I'd do the Sibelius.

"Tell Slavi I'd rather do the Mendelssohn," I said to the concertmaster, grinning into the phone. Because, after all, I knew that it wouldn't be either. Sure enough, two days later I got a bunch of flowers with a note in Elena Rostropovich's handwriting that said:

"Not only talented—not only beautiful—but also very sensible! Slavi sends his admiring compliments and asks that what you really play is the Gershwin, since the President will be there."

I wired back that I would be delighted. I was. The Gershwin is one of the greats, as well as being the only violin concerto composed by an American fit to call pigs with. Anyway, I knew that President Reagan wasn't going to want to hear some foreigner's stuff.

Elena Rostropovich was a sweet lady although I didn't always know what she was thinking. I didn't really know, for instance, if she knew about Dom and me. We were very careful to avoid gossip. Still—she never said a word to me, not even a wink; but when I got an invitation to a late dinner after a concert, I knew that an identical one went to

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Dominic's home in Virginia. Mine was always for Mr. and Mrs. Bowquist. Dom's was always for Senator and Mrs. DeSota. It didn't matter if our mates were back in Chicago, as Ferdie was almost always and Marilyn DeSota more often than not. So Dom would spend the night before in my hotel suite; we'd both put in a full day's work on the day of the concert, and at eleven o'clock that night we would "discover" each other, with expressions of cordial surprise, at Elena's party. Then she would suggest that, since we were both unattached for the evening, Dom take me home.

Which he unfailingly did.

Those evenings were the best kind of time Dom and I had. We were actually able to appear in public together. Then, later on, when we were in private, there was very little chance of either one of us being caught out by our mates. Anything we did like that in Chicago was pretty risky. There was always the chance of somebody one of us knew accidentally turning up at the wrong time—in a hotel lobby, or an elevator, or the restaurant where we met. Other cities, not much better. Sometimes by good fortune Dom could invent a reason to fly up to Boston or New York or wherever I was on the road, but we were always squeezed for time. No. Washington was the best . . . anyway, the best that I could see any way of our ever having.

Even that wasn't perfect. We knew people in Washington too. Sooner or later, either Ferdie or Marilyn was going to hear a hint, or feel a suspicion. From that moment on it would be only a matter of time. Private detectives? Maybe. Why not? Betrayed spouses don't necessarily play fair.

And then the whole thing would come crashing down on our heads, and what would happen after that would be really nasty. . . .

But, please God, not yet awhile. "Not ever," said Dom firmly, pulling on his socks at two o'clock one morning, when I had just said that to him.

"It has to happen sooner or later, darling," I said reasonably.

"It does not. We don't have to get caught." He paused in putting on his pants to bend to kiss my navel. "We can go on like this forever. Even if we did get caught—"

I headed off what he was going to say next. Or tried to. "President Reagan is going to be at the concert," I told him.

"Yes? What about it? Oh," he said, nodding wisely as he zipped his fly, "I see the connection. You mean you wouldn't want to shock the President, right? But if we don't get caught she won't be shocked, will she? And even if we do, there's always the alternative of—"

"No, there isn't," I said, before he could finish the sentence with "getting married." Because that was the one subject I refused to discuss, ever, with Senator Dominic DeSota. I could stand being unfaithful to a man who loved me. I couldn't stand the idea of throwing him out of my life, in public humiliation.

So I wasn't altogether sorry when Dom had to go off to New Mexico, because he'd been getting more and more insistent about that, and I was running out of easy ways to fend the idea off. And on the night of the concert, as I

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opened the concerto in that fast, syncopated "allegro *hot*" first movement, his seat in the third row center was empty.

What happened next was totally unexpected, and to explain what was going on I have to explain about the concerto.

Gershwin died young. He'd only begun composing violin music of any kind a couple of years before the taxi caught him crossing Fifty-second Street. Then, out of almost no experience, he produced this *wonder*. It was all his own, too. In the early days Gershwin had to hire Ferde Grofe to do his orchestrations for him, but by the time of the Violin Concerto he had mastered the art. The woodwinds and percussion were as much his very idiosyncratically own as those heart-melting violin themes.

It had something else to it that I liked, a trick he'd borrowed from Mendelssohn. Mendelssohn didn't want to take the chance that some dummy in the audience would think the pause after the first movement meant the whole concerto was over and so start to clap. *That's not awful in itself, but what* makes it troublesome is that then half the audience is flustered because they applauded in the wrong place, and the other half is irritated because those dummies have held up the performance. So Mendelssohn doesn't let anybody make that mistake. There is a sustained note left over from the first movement that continues right into the opening of the second. There is never that moment of silence when the audience fidgets, and the men who are there because their wives insisted on it are looking nervously at their neighbors to see what's expected of them, and up on the stage you hear the rustle and the whispers and the muffled coughs. I've often wished that Tschaikowsky and Bruch and Beethoven had been that thoughtful, and been grateful that Mendelssohn and Gershwin had.

Funny, though. This time the soft, almost subliminal tattoo of the drums did not keep the audience from stirring. I saw an usherette lean past Dominic's empty seat to whisper in Senator Kennedy's ear. Slavi was already raising his baton for the start of the second movement, but that didn't keep Jack Kennedy from rising and slinking away up the aisle. As I counted bars to the beginning of my own part I saw Jackie give me a smile and a tiny, spread-hands shrug of apology. With almost any other Senate wife I would have known that was just convention, but I knew that in Jackie's case she was personally contrite. She was the cultured one in the gallery of Senate wives. She would have made a fine first lady, I always thought, if her husband hadn't been short-counted in Chicago in 1960.

The disturbance didn't end there.

With help from people like Jackie and Slavi Rostropovich—and, of course, from Dom—I had turned out to be pretty much Washington's favorite society fiddler. So the audience was what they call "social." Meaning, in Washington, governmental—diplomats, legislators, top people from the Administration. Even President Nancy was there in her box, with her First Gentleman sitting, as always, urbane and self-assured beside her. That kind of an audience had special problems. The worst of them was that if something went terribly sour somewhere in the world, half the au-

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dience would have to be told about it at once.

It had. They were.

By the middle of the slow movement there were gap-toothed empty seats in every part of the house. When I finished my tricky, and beautiful, crescendo in the third, the applause was lean. It wasn't lack of enthusiasm, I thought. It was lack of people. Slavi looked at me. I looked at Slavi. We both shrugged in baffled resignation.

For decency's sake we took two bows. Then we retired from the stage and didn't come back, giving the audience a chance to escape—as many of them were anxious to do.

As curiosity made many of us on the stage eager to do.

It was worse for Slavi than for me. I was through for the evening and glad of it, while he would have to come back after the intermission to do the second half of the program. It was Mahler, and both of us knew there would not be much of a crowd to sit through that interminable First Symphony.

When we found out what was happening that became a certainty.

The first one to get to us to tell us was my dresser, Amy. Amy doesn't really "dress" me, although I'm sure she would if she had to. What she does is take care of me. She keeps an eye on the Guarnerius when I put it down for a moment; she makes sure I have a dress without stains or wrinkles to wear for the concert, and another for the usual party afterwards; she sees that there are always tampons in the side pocket of my music bag. She does all that, and one big other thing. She keeps my husband from getting suspicious when I'm off somewhere with Dom.

She also tells me what I need to know, even if I'm not going to like it. *Especially* if I'm not going to like it. Of all the shocked, scared, and worried expressions backstage that night, hers was the most upset; but she pushed through the muttering, whispering stage hands and musicians to get to us. "Nyla," she wailed. "Albuquerque's gone crazy!"

Albuquerque was, of course, where the Sandia base was. Where Dominic was. I stopped short. My knees went weak. From behind me Slavi caught one arm. Amy caught the violin and then the other arm, in that order.

"And Dom?" I croaked.

"Oh, Nyla," Amy sobbed, "he's the worst of the lot!"

A man named Dominic DeSota, sweating as he moved through the reeds around the old water-detention pond, raised his head from his work. He thought he saw a sudden glow of orange light in the sky toward the southeast, in the place where Chicago had once been. It wasn't an illusion. It was a real burnishing of the low clouds, as though there were a huge, distant fire. He stood up straight, peering. What were those lights off on the horizon? There were streams of white, streams of red, the white lights coming toward him and the reds away. It was almost as though there were cars again! But they disappeared in the wink of an eye and he was alone in the sultry night. He returned to the job of emptying the last trap on his line, where what had once been someone's pet Angora hissed and spat. It was no

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longer sleek, fat and pretty, but DeSota was glad to see it. It was dinner.

23 August 1983
10:20 P.M. Major DESOTA, Dominic P.

It was just the purest chance that the first prisoner I took was myself.

I would have seen me sooner or later, of course. We knew I was there. Maybe "I"—that "I" who was now my prisoner—did "me"—the man who nailed him—a favor, because one of the reasons I got command of the first assault detachment through the portal was because that Senator Dominic DeSota was there. (Senator! How had that happened? How had I risen so high in his timeline, and only to the damn dumb rank of field officer, and reserve at that, in my own? But that other DeSota's position was going to help me elevate mine. . . .)

"They're ready, sir," said Sergeant Sambok.

"Good-oh," I told her, and followed her back upstairs to the office of the chief scientist. I didn't have time to think about the grammatical games I was learning to play—the "I" who watched "me" through the peepers, the "them" who were "us." I didn't have time to wonder at what I'd wondered at a time or two before, either—namely, at the curious coincidences between that Dom DeSota's life and my own. Our lives were different in tremendous ways. But both of us had wound up involved in the parallel-time situation—and not, of course, just "both" of us, because there were all those other Dominic DeSotas in all the other times. The tech advisors had no time for such questions. I knew that was so, because I'd asked them. All they would say, not counting mathematics, was mumble-mumble, after all, we Dominic DeSotas had genes in common; had boyhoods in common, anyway up to whenever the point of separation was; we'd read the same books and seen the same movies. So naturally we set into similar molds. . . .

"Right in here, sir," said the sergeant, and I walked through the door she held open for me into the office of the operating head of the Cathouse, as these people had amusingly named their parallel-time project.

The Signal Corps lieutenant said, "You're on in thirty seconds, Major."

"Right," I said, and sat down at the desk. It was clean—the Chief Scientist was one of those security-conscious guys, no doubt. The only thing on it was the Signal Corps microphone with the wires that led to the backpack transmitter on the lieutenant's helper. I tested the drawers. Locked, but we'd take care of that in a minute.

"Break a leg, sir," said Sergeant Sambok, grinning at me through her camouflage makeup, and I was on.

"Ladies and gentlemen," I said into the microphone, "this is Dominic DeSota. Urgent circumstances have led to the necessity for a precautionary action at Sandia Base and nearby. There is nothing for you to fear. In one hour we will make a television broadcast through the local stations. All networks are urged to carry it live, and at that time the necessity for this action will be made clear."

I looked at the lieutenant, who drew his finger across his throat. The corporal

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with the backpack moved a switch, and I was off the air.

"See you later, Major," the lieutenant said, and followed his crew out of the room.

I leaned back, testing the leather chair. These people did themselves well; there were paintings on the wall and carpeting on the floor. "How'd it go, Nyla?" I asked.

She grinned. "Really well, Major. If you ever get out of soldiering, you ought to get into radio."

"I'm too big to fit into those little-bitty sets," I told her. "Have you notified Tac-Five this building is secure?"

"Yes, sir. Tac-Five says, 'Well done, Major DeSota.' The follow-on echelons have taken the next six buildings, too. The whole area is secure."

"The prisoners?"

"We set up a stockade in the parking lot. Corporal Harris and three men are guarding them."

"Fine, fine," I said, pulling at the locked drawers again. I'd taken over the Chief Scientist's office, but unfortunately the Chief Scientist had been off the base at the moment. He had taken his keys with him. An annoyance, not a problem. "Open this for me, Sergeant," I said, and Sergeant Sambok studied the locks for a moment, gauged the angle of possible ricochets, then placed the muzzle of her carbine a few inches from the lock. .25 caliber bullets whined across the office as she shot it out.

The drawers opened with no further trouble. Inside was the usual mess of disorderly stuff you find in a neat man's desk, but amid the mess were a couple of notebooks and a whole drawer of files. Of course, we'd watched these people pretty closely for months before we opened the portal, but Dr. Douglas would want to look the papers over. "Orderly," I said. Sergeant Sambok nodded, and a private popped in from the hallway. "Take this stuff back to the sally port," I ordered, juggling a slim, expensive-looking gold cigarette lighter engraved *Harrah's Club, Lake Tahoe*. It would have made a fine souvenir, but I put it back and slammed the drawer shut.

After all, we weren't thieves.

Sergeant Sambok was standing by the door, and something about the look on her face made me ask, "What else, Sergeant?"

"Private Dormeyer is AWOL," she said.

"Shit." Her look expressed concurrence with my opinion. "There's no AWOL under combat conditions. If the MPs get him, they'll call it desertion." More concurrence. "Damn it, Sergeant, somebody's got to know where he's gone! Find him. I want to keep this in the company."

"Yes, sir. I'll take care of it myself."

"Yes, you will," I told her. "Take ten minutes to find out where he is. Then meet me at the sally point."

My assault party was the first one through, but we'd attained our objectives. There were three hundred more troops on the base now—ours, I mean, not counting the ones we were taking prisoner—and I had nothing to do any more until it was time for the television broadcast. That wouldn't happen until the TV station in Albuquerque was secure, so that we could get it on the network. I headed down for the sally point

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in the basement of the building. Once it had been a pistol range, but when our peepers found it it wasn't used for much of anything.

Tht made it perfect for us. We got our whole party across before anyone knew we were there.

Sandia was an old military base, in our time as well as theirs. The difference was that in our time it had stayed small. In theirs it had grown immense. There were square miles of desert and hill inside its barbed-wire boundaries.

There were not, however, very many of their troops actually deployed anywhere on the base. The perimeter was guarded more by electrons than by men, with a post only every quarter mile or so along the fence. Of course, that must have seemed like plenty of protection to the base commandant. Outside of a paratroop drop, which would have given plenty of radar warning, there was no way any sizable number of enemies could get up to the wire without being detected in plenty of time to summon reinforcements . . . unless, like us, they came from inside. When I got to the sally port there was already a map of the base tacked up on the wall, with the secured points in red crayon. The key parts had been the Cathouse and its immediate neighbors, the MP barracks, the headquarters, the signals exchange, and the radio station. We now owned them all. The few troops who had thought they were guarding them now realized how badly they had failed, in our stockade.

Troops were still coming in. They weren't needed, but it did no harm to have them—what if the previous occupants, against all logic, decided to fight? Bright floodlights racked along the wall showed the column of twos emerging from nothingness. They broke step, marched to a wall, fell out, were assembled again by their officers and non-coms, and marched off to reinforce the troops already in place.

It was a weird sight. If you positioned yourself right next to the sally portal, in the same plane as the plane of the portal itself, it was even weirder. Toes, feet, legs, fists, bellies, heads appeared in that order. If you got *behind* the portal plane, you could see—what would you guess? Raw meat and guts? The insides of those transported soldiers? Nothing of the kind. You couldn't see anything at all. Because from behind, the whole rectangle of the sally portal was featureless, lightless, unrelieved black. From in front there was nothing much, either—just the troops emerging from the portal, and behind them the duty walls of the old pistol range.

"Major?" It was Sergeant Sambok again. She looked around and lowered her voice to say, "I think I know where Dormeyer went."

"Good work, Sergeant," I said.

She shook her head. "He's off the base. He sneaked off somehow. He's gone into Albuquerque. The thing is, he lived—he lives here. In Albuquerque, I mean."

Not so good. But it wasn't her fault. "You did right," I said, and indeed she had. For a reservist, Nyla Sambok was a first-rate soldier. The funny thing was that she'd been a music teacher in civilian life, married to a harpsichord player. They'd both got their scholarships by joining the Reserve and they'd both been activated in the call-up; a lot

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of reservists were bitter, but Sambok was good enough and soldier enough that I'd requested her to come down with me from Chicago to take over this detachment. The fact that she was a great-looking woman didn't hurt any, either. But I've never messed around with the enlisted personnel. Only thought of it, now and then.

"Tac-Five will be on the horn for you in about two minutes," she went on. "I got the word as I was coming in."

"Fine," I said, "but I've got an idea. Go down to the stockade and bring back Senator DeSota's clothes for me."

Even Sergeant Sambok could look surprised. "His clothes?"

"What I said, Sergeant. You can leave him his underwear, but I want all the rest. Even the socks."

A quick flash of comprehension crossed her face. "Right, Major," she grinned, and was gone, leaving me to wait for Tac-Five's call.

Two-way communication across the skin that separates parallel times is harder than one. They had to shut down the portal and collapse the field to get the energy, but when the portal officer nodded I picked up the phone and General Magruder didn't keep me waiting. "Well done, major," he barked. "The President says the same. He's been following this very closely, of course."

"Thank you, sir."

"Now we go to Phase Two. Are you ready for your television broadcast?"

"Yes, sir." Meaning that I wasn't, actually, but I would be as soon as Nyla Sambok got back with the clothes.

"The TV station and the microwave links are secure; they'll have the circuits open in half an hour. They've already got the President's tape ready to go, as soon as you do the introduction."

"Yes, sir."

"Good." Then his tone changed. "One other thing, Major. Any sign of rebound?"

"Nothing new, sir. I think we're still interviewing the locals, though."

"Um. Any more unwelcome visitors?"

"No sign of any, sir."

"Keep your eyes open," he said harshly, and hung up. I recognized the tone. It was the voice of fear.

Half an hour later, walking over to the base's television studio in the hot desert night, with the same stars blazing overhead that blazed over my own America, I was feeling some of that fear myself. An MP jeep patrol cruised past, headlights swiveling from side to side. They paused long enough to take a good look at me and my assault-force armband, then picked up speed and moved on. They didn't challenge me. They didn't ask for ID.

I could have been one of those unwelcome visitors. I could have been that other me who seemed to have been everywhere. And, if I had been, all I would have had to do was get a scrap of green cloth to pin around my sleeve and they would never have known the difference. And then—

And then what would that other me have done?

That was the scary question. So far they had watched and pried. But they had done nothing at all.

I couldn't really blame the MPs for sloppy security, because they obviously didn't see the need to be tight. We had

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taken over the base without a shot being fired, against opposition that consisted mostly of sleepy-eyed sentries being struck dumb with astonishment when our troops pulled them in. What a way to run America! I wondered what it would be like to live in a country where important bases were guarded by only a handful of Regular Army troops —where there had been no draft or call-up of reserves. If I'd been left to finish my post-graduate courses at Loyola instead of being activated into the reserve, what would I be by now?

—A Senator, maybe?

It was not the kind of speculation that I could afford to get into, while I still had an important part of my job to finish.

Sergeant Sambok was waiting for me at the studio with Senator DeSota's clothes, as promised. I found a dressing room and slid out of my coveralls. He dressed himself well, that other Dom DeSota; shirt, tie, socks, shoes, pants, sports jacket—everything was good cloth or good leather. The cut was peculiar —his fashions were not the same as ours—but I liked the feel of the silky shirt and the soft, crisp-creased slacks. They could have fit a little better. The other Dom was a good size fatter than I, which was a satisfaction, even if it did spoil the cut of the clothes a little.

When I came out of the dressing room the sergeant wasn't critical. "Looking sharp, Major," she complimented.

"What did you leave him in?" I asked, peering at myself in the mirror, and when she grinned I knew the answer. He wouldn't get cold in that August heat in his underwear, but still. . . . "Take him my spare fatigues," I ordered. "They're in my B-4 bag." Fortunately for him, I liked my fatigues a little loose, so he could undoubtedly get into them.

"Yes, sir," said Sergeant Sambok. "Sir?"

"What is it?"

"Well—if you're going to wear his clothes and he's going to wear yours, wouldn't that be a little confusing? I mean, suppose he got to you and knocked you out and changed clothes. How would I know which was which?"

I started to open my mouth to tell her she was a fool. Then I closed it again. She was right. "Good thinking," I said. "Tell you what. I'll be the one who knows your full name, okay?"

"Yes, sir. Anyway, as long as he's in the stockade and you're not. . . ."

"That's right," I agreed, but then I felt what I'd been unwilling to let myself feel for the last couple of hours.

I wanted to confront this other self of mine. I wanted to sit and talk to him, hear his voice, find out where our lives had been the same and where they differed. It was an itchy, quivery sort of thought, like getting ready for the first time you do dope, or the first sex; but I wanted it.

I didn't have time to think about it just then, because I was on. The cameramen gaped at my snappy civilian clothes, the signals captain grinned openly, but it was time for my television debut, ready or not.

More not than ready. They've always got to swing a mike into position or switch a camera or send somebody out into the hall to stop somebody else's chattering, but in a moment the corporal who was acting as director cried, "Stand

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by, sir!'' He listened to his headphones for a moment, and then began to count. ''Ten. . . . Nine. . . . Eight. . . . Seven. . . . Six. . . . Five. . . . Four. . . . Three. . . .'' For the last counts he used his fingers, two fingers, one finger, then the single finger stabbed at me and the green light over the camera went on and the prepared speech began to roll.

''Ladies and gentlemen,'' I said into the camera, ''I am Dominic DeSota.'' That was no lie; I was. I didn't say I was *Senator* DeSota, though the fact that I was now wearing his clothes might have carried that implication. There wasn't much more to my speech: ''An emergency has required that this action take place. I ask that every American listen to this broadcast with an open mind, and with the generous heart of all us Americans. Ladies and gentlemen, I give you the President of the United States.''

And the photons of my face and neck and that other Dominic's suit and tie and shirt went flocking into the camera and came out as electrons; as electrons snaked through the cables of the base studio to the microwave dish on the roof, were reconverted to photons of a different frequency and, as radio signals, were hurled across the valley to the transmitter towers of KABQ, bounced up into the air and through it, to a satellite thousands of miles away in space and showered down on the television sets of the United States. *This* United States. And what they would make of it I could only wonder.

The whole Signal Corps detachment was in uniform, but there was still a lot of civilian in their blood. Reservists, called up for the emergency, they were almost all veterans of the networks. They'd arranged themselves some civilian comforts. There was a pot of coffee brewing in the lounge outside the studio, and a plate of packaged cakes and junk foods—someone had liberated the local PX.

I poured myself a cup, listening to President Brown's voice coming over the monitors: ''—as the President of the United States, speaking to you who are also the President of the United States, and to the American people—'' He looked nervous but well rehearsed as he read the lines written for him. ''—at this point in our history we are confronted with the terrible despotism out to conquer the world—'' and ''—the ties of blood and common devotion to the principles of freedom and democracy—'' and on and on. It was a pretty good speech; I'd seen the text beforehand. But the important thing wasn't anything in his speech. It was the fact that we were in control.

The same voice was coming from a control room just down the hall, door open. I carried my cup down to peer inside. There they had not one but a dozen monitors, almost all of them showing the President's earnest face, saying the same things; but there were also a couple of screens that showed other faces, looking serious and even more earnest: John Chancellor, Walter Cronkite, a couple I didn't recognize. They were doing commentary already. That was a surprise, until I remembered that the President's speech was only four minutes long. It had played once and was being rerun by the stations that had

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been caught off guard and didn't have an instant response ready; the others were already reacting.

I looked at my watch. Midnight local time. It would be two A.M. in the big cities of the East Coast, but I doubted very many of the population would be sleeping. And in California the citizens would be tuning in for their late-night news and getting a kind of news they hadn't expected.

Serve them right. Why should they be fat and happy when we were facing the terrible struggle for the freedom of the world?

Even a commander of assault troops has to sleep sometime. I got nearly five hours. When I woke up it was to the smell of bacon and coffee. I was in the Chief Scientist's office, making use of the Chief Scientist's eight-foot couch, and Corporal Harris was setting a tray down next to my head. "Sergeant Sambok's compliments, sir," he grinned. "We occupied the officers' club last night."

The eggs were nearly cold, because they'd been carried, but the coffee was hot and strong. It was just what I needed to get me going.

First stop was the studio again. The soldier-technicians had been joined by three civilians, an old woman, a young woman, and a bearded man of no particular age. I stopped the Signal Corps captain, jerked a thumb at the civilians clustered in front of the monitors and raised an eyebrow. "Them?" he said. "Them's scientists, Major. Anyway, that's what they say they are, and their orders are okay."

"Doing what?"

He shrugged. "Monitoring responses to the President's message, they say. It's some kind of political-science study, you know?" I didn't know. "Anyway," he said sourly, "there's damn little to study, because there hasn't been diddly-shit coming out of this President they got here."

That wasn't the kind of news I wanted to hear. "You could check with Tac-Five," he added as an afterthought, but I was already on my way back to the Cathouse. The base was nice and calm in the hot desert morning. I wasn't. Dry as the air was, I was sweating into my second-day's-wearing fatigues (maybe I shouldn't have been so generous with my spares!), and beginning to feel worried.

General Ratface Magruder was where you'd expect a general to be at seven o'clock in the morning, namely asleep, but I got Colonel Harlech. He was not a friendly soul. When I asked him about the civilians, he pruned me back to the trunk in half a dozen words. "They're authorized and none of your business, Major," he snapped. "What's the status of your base?"

"All secure, sir"—hoping it was so, because actually I hadn't checked my own troops out. "Still no sign of rebound here."

"Unwanted visitors?"

"Nothing reported, sir." At least not to me. "Sir? May I ask about Dr. Douglas?"

Rusty chuckle. "He's in his tent under guard and scared shitless. What's the current status on enemy signal interceptions?"

He meant listening in on radio and TV. "No clear pattern, sir. They do

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keep repeating the President's broadcast. He comes through loud and clear."

Colonel Harlech didn't actually say *Shit*. He just made a noise close enough to be clear, muffled enough to be deniable. Harlech was one of Magruder's own hot-shot warriors, and everybody knew what they thought of the President. Who had opposed a preemptive strike vigorously . . . until the Chiefs of Staff let him know they had plenty of military prisons for politician who got in the way of what they considered the essential defense of the United States.

When I got off the cross-time phone with the colonel I debated going back to the studio for a word with the poli-scientists. It would be interesting to hear their theories about why a militarily active U.S. society like ours got a jelly-backed President like Jerry Brown, while this other one, fat and peaceful, had elected the fire breather, Reagan. But I was a soldier, not a scholar; and there were things I was more curious about than that. I yelled for an orderly, and when Corporal Harris stuck his head in the door I ordered him to go down to the stockade and bring back the prisoner, Senator Dominic DeSota.

He sat there in my fatigues, looking so much like me that it was embarrassing—I couldn't take my eyes off him, and he was studying me just as hard. He wasn't scared. At least he didn't look that way. What he looked was partly resentful and mostly interested—a quality I have always admired in myself. "You're a ballsy guy, Dominic," I told him. "Tell me. How's this thing going to go?"

He stretched thoughtfully before he answered; he'd been sleeping too, and on something not as comfortable as the Chief Scientist's couch, no doubt. "You mean how is President Reagan going to respond to armed invasion?" he asked.

"That's the hard-nosed way to look at it."

"It's a hard-nosed thing to do, Dominic. What do you hope to gain from this?"

"Peace," I grinned. "Victory. The triumph of democracy over tyranny. I don't mean *your* tyranny, of course. I'm talking about our mutual enemy, the Russians."

He said patiently, "Dom, I don't have any Russian enemies. The Russians just don't signify in the world—my world. They would have starved if we hadn't fed them after their shoot-up with China."

"You should've let them starve!"

He sighed, disliking me. "So you come along and invade us. Without warning. He shrugged. "You tell me how it's going to go. You're making the play."

"It's going to go our way, Dom," I grinned. "The sooner you guys understand that, the easier it's going to be for you." He didn't answer that. I wouldn't have, either. I tried being friendly. "It's our country, whichever side of the barrier we're on," I said persuasively. "You ought to cooperate, because we have the same basic interest—the good of the United States of America—right?"

"I sure as hell doubt that, Dom," he said.

"Aw, Dom, come on. You might as well take my word for that because, after all, you don't have much to say

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about it, do you? We've got you by the ying-yang . . . speaking of which," I added, "how's your prostate?"

That surprised him. "What are you talking about? I'm too young to have prostate trouble."

"Yeah," I said. "That's what I thought when they told me. Better have it checked."

He shook his head. "DeSota," he said, looking a lot braver and more determined than I thought I might have in his place—pleasing me, because that made me think maybe I would have —"let's cut out the bullshit. You invaded us without warning, and that's a pretty dirty thing to do. Why did you do it?"

I smiled, "Because it was there. Don't you know how these things go? We had a problem, and we saw a technological solution. When you get the technology you use it, and we got the technology." I didn't bring up the question of how we got it, which after all was not very relevant. "See, old buddy, you're faced with what we call a nonnegotiable solution. Our President tells your President what we want to do. You let us do it. Then we go away again and that's the end of it."

He gave me a searing look. "You don't believe that, do you?" he asked.

I shrugged. We knew each other well enough to know that neither of us would believe it. I hadn't thought beyond the objective of the exercise—officially—but he knew as well as I do that once we had used their time-line to take care of the major enemies in our own we would not very likely go away. There would always be other little jobs we could use them for.

But that was too far in the future for me to worry about—though I could see why that other me would worry, a lot. I said, "Get back to the question. Will your President listen to ours without a struggle? In my time the Reagans and Jerry Brown weren't exactly buddies."

"What's that got to do with it? She'll do what she has to do. She's sworn an oath to protect and defend the United States—"

"Yeah, but which one?" I grinned. "Our President swore the same oath, and he's carrying it out." Reluctantly —being a wimp, but I didn't say that. "And the best way for old Nancy to protect you folks would be to let us do what we want. Do you have any idea of what the alternative is? We have all the muscle! You want us to push some anthrax into the White House? Smallpox-B into Times Square?" I laughed at his expression. "What's the matter, did you think we were just talking hydrogen bombs? We wouldn't want to mess up a lot of good real estate."

"But biological weapons are—" He stopped, thinking. He'd been going to say that they were against international law or something.

I explained, "After Salt II we had to do something. We pretty much gave up nukes. So we worked on other things."

"What's 'Salt II'?" he asked; then, immediately, "No, the hell with that, I don't want history lessons from you. All I want from you is for all of you to go the hell back where you came from and leave us alone, and I doubt you'll do that. If it interests you, you make me want to puke."

What a feisty little devil he was! He made me almost proud . . . but also

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mad. "Bullshit, Dom!" I yelled. "You would have done the same thing! You were getting ready to, one way or another—otherwise why were you working on this Cathouse project?"

"Because—" he began, and stopped. His expression was a good enough answer. He changed the subject. "Have you got a cigarette?" he asked.

"Gave it up," I said with satisfaction.

He nodded, thinking. "I really didn't believe it would work," he said slowly.

"But you were in there trying, boy, weren't you? So what's the difference? We're not doing anything you wouldn't have done if you'd finished your research ahead of us."

"That's—that's doubtful," he said. Honest of him. He hadn't said, "That's untrue."

"So will you help talk your President into it?" I pushed.

No hesitation this time. "No."

"Not even to save a lot of lives, maybe?"

He said, "Not even for that. No surrender, Dom. . . . And I'm not sure I would want to buy a few American lives with a few million Russians, either."

I looked at him in amazement. Was it possible that I—in any incarnation—could be such a softheaded fool? But he wasn't looking soft-headed. He leaned back in his chair, studying me, and suddenly he seemed taller and more sure of himself. "So what's the thing that scares you, Dominic?" he asked.

"What do you mean?" I sparred.

He said, reasoning it out, "Sounds to me like you've got a worry you're not telling me about. Maybe I can't guess what that is. On the other hand, maybe I can. The reason I came down here was because there was another one of us snooping around. He seemed to know what you were going to do. If I were you, I think I'd be real worried about him. Why? Who is he? What's going on?"

I should have known that it was hard to keep secrets from myself. I was never a dummy, not even in this Senator incarnation. He'd twigged to the thing that was most on my mind—or one of them.

I said slowly, "He's from another parallel time, Dom."

"I guessed that much," he said impatiently. "Did he visit you before?"

"No. Not exactly. Not him." I didn't want to tell him any more about the visitor we had had—the one we had managed to catch and detain, who was now sitting in his tent under guard on the other side of the portal, sweating with fear that his people would find him and do something bad to him for helping us develop the portal. "But we did have a visitor. Maybe more than one."

"Keep talking."

I said, "Have you ever heard of 'rebound'?"

"Meaning what?"

"Meaning bouncing back. When you go through the skin, or whatever it is, that separates one time from another, there's some kind of conservation effect. Things begin going in the other direction."

He frowned. "You mean other people being thrown back and forth?"

"Not just people. It's complicated. It depends on how badly the skin is torn. Sometimes it's just energy—light, or sound. Sometimes it's gases drifting back and forth, or small things—birds

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flying, maybe. Sometimes it's a lot more."

"And that's happening here?"

I said unwillingly, "Seems to be, Dom. And not just here."

He stood up and went over to the window. I let him think it out. Over his shoulder he said, "It sounds like you people are really screwing the bird, Dom." I didn't answer that. He turned around, looking at me. "I wish you'd get me a cigarette," he said testily. "This stuff is hard to take calmly."

I debated for a moment whether to hardnose him on that, decided not to. "Why not? They're your lungs." I poked at the intercom on the desk until I figured out which button connected with the orderly room and told Sergeant Sambok to bring up some smokes. "So," I said, "we want to get this thing squared away. Are you going to help us?"

He said simply, "No."

"Not even when it's as risky as I'm telling you? Not even when your country is defenseless against us anyway?"

"You got into it, Dominic. You get out of it by yourself," he said definitely, and turned toward the door as Nyla Sambok appeared with a carton of tax-free PX cigarettes.

And all of a sudden my friendly other self changed from the self-assured name/rank/serial number-only prisoner to something brand new.

What the hell had happened to him? He was staring after the sergeant as if he'd seen a ghost. I never saw such an expression of astonishment, and rage, and worry on any human face—least of all on my own!

* * *

A man named Dominic DeSota sat before a screen, his fingers busy on a keyboard, analyzing and recording. Without lifting his fingers he spoke into a tiny microphone that curved around his cheek, "Boss? This one's the farthest off yet. There don't seem to be any vertebrates in it at all."

24 August 1983
9:20 P.M. Senator Dominic DeSota

When I got back to my home away from home, the stockade in the J-3 parking lot, I found out I had missed breakfast. I was also missing six of my fellow prisoners. There were a dozen or so of the base's permanent party soldiers still there, including a couple shamefacedly wearing "PW" stencils on their shirt backs and picking up left-over cafeteria trays from where the others had left them. A different soldier, with a green armband, was watching them with an automatic pistol held loosely before him. One of Major DeSota's, no doubt.

But of the few civilians who had shared the canvas cots in the parking lot with me the night before there were none. This upset the corporal who had brought me back. He motioned me inside the fence while he muttered worriedly to the other guard. It didn't worry me. I had other things on my mind.

I had *one* other thing: Nyla Bowquist!

I don't know how to say how shattering it was to see my dear lover in an Army uniform, with traces of black-out makeup still on her face, a gun over her shoulder, looking at me with no recognition at all.

Now that I had time to think I realized that it was likely enough that there would be another Nyla in their time, just

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as there was another Dominic DeSota —and, no doubt, another Marilyn (but whom would she be married to there?) and another Ferdie Bowquist and a whole other cast of characters. The other Dom DeSota wasn't at all the same as me. There was no reason the other Nyla should be. This one was not a famous concert violinist. She wore her hair shorter and her eyes less made up. And her clothes—well, it was an army uniform, after all. My Nyla dressed beautifully, but this one hadn't had the freedom of choice.

But so heartbreakingly similar! And she hadn't known me at all! Or—that was not exactly true—she had known me as a copy of that other Dominic, whom she had known, all right (but not, I thought, in the Biblical sense). I wondered if I would see her again. . . .

And wondered instantly if I would ever see my own Nyla again. And wondered at myself! Here I was in the middle of huge, fantastic and frightening events, and the thing that filled my mind was the woman I was having an affair with—

"You! Prisoner DeSota!" growled the corporal, and I realized he'd been waving at me. "Come on, your people have been moved. I have to take you to the assembly point."

I looked at the other prisoners, who only looked back at me in the opaque, I-only-work-here expression of enlisted men in a situation not covered by orders. "Where's that?" I asked. But the only answer I got was a nasty twitch of the machine-pistol.

It wasn't far. It was right back the way we had come, to the Officers' Club just across from the Cathouse.

I'd been in it before. Many times. It was a sort of lounge where the people working could sit for a cup of coffee and a short conversation away from their desks, or take their latest load of information memos to read over in peace. It looked as it always had, except that there were nine people in it who clearly didn't want to be there. Two of the civilian scientists were pacing back and forth, glaring out the windows. Colonel Martineau was sitting talking to one of the women, whom I recognized as a mathematician brought down from I.I.T., and therefore one of my constituents. "Edna," I said, nodding. "Colonel." Just as though I happened to drop in for a Coke and nothing strange was going on at all.

"We wondered where you were," said the colonel.

"I was being questioned by that nasty other Dominic DeSota. Made me miss breakfast."

"If you have any quarters," he said, "there's a vending machine right out in the hall, and the guard'll let you use it." I didn't, but Dr. Edna Valeska did—just like our own, except that the face was Herbert Hoover's. A soft drink and a couple of Twinkies didn't make a meal, but at least they informed my stomach my intentions were good. Out of habit, Colonel Martineau made a round of the room while I was getting them, checking windows (shake of the head; armed guards outside), checking the other door (locked), listening to the telephone (dead). Then he sat down and watched me eat. "We've all been questioned," he said. "What interested them most

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seemed to be you, Dom—anyway, the first man who looked like you. The one who disappeared."

"They asked me the same thing," I said, mouth full of lardy sugar. "I didn't see any harm in telling them what I knew—which wasn't much, of course. Should I have stuck to name, rank and serial number, which I don't have?"

He looked at me in surprise. I was surprised, too; I hadn't realized how edgy I was. "I think we have to play this one by ear, Senator," he said, placating me. I grinned to show I was sorry, and Edna Valeska perched on the couch next to me to get into the discussion.

"The good news," she said gloomily, "is that we have proof now that the Cathouse Project works. The bad news is they got it before us, and they're using it; and the worse news is that there seems to be more than one other time-line involved. There's no other explanation that saves the facts."

"That's the way it looks to me," I agreed, "but who are these other ones?" Shakes of the head. "Christ. I'm not used to this kind of stuff."

Flash of a grin from Edna. "Who is?"

"Well, but it's your project!" I protested. "If you don't know what's going on, who does?"

"I said I wasn't used to it, Senator. I didn't say I didn't understand it—part of it, anyway." She saw my eyes on her cigarettes and plucked one out for me. "For instance," she said, lighting us both up. "We know quite a lot about the time-line of our visitors—the invading ones, that is; the one where you're a major in the Army."

"We do?"

"To be sure. They're invading because they want to get at an enemy in their time through the back door—the same as we were preparing to do."

"Dr. Valeska," I said, "we weren't *preparing*. The mission of the Cathouse was to study *feasibility*. There were no operational plans."

She shrugged, dismissing the distinction without enough difference to matter. "There's one other solid deduction, and one other fact. The deduction is that, although they've gotten pretty far along with time-crossing, there is at least one other time-line that's gotten further. The one that produced the first Dominic DeSota."

I noticed that not only had the others in the room begun to cluster around to listen, but even the guard in the doorway was flapping his ears in our direction. Well, why not? Maybe I could read something from his expression. "How do you know that?" I asked, watching the guard out of the corner of my eye.

"Because these other people—we'll call them 'Population One'—can slip one person through at a time and pull him back from the other side. I don't think Population Two—the invaders—can do that." The frown on the face of the guard made that seem plausible, I thought. Edna Valeska was noticing it too, I could tell. "So," she said, "there's another player in this game."

"So we might have an ally," I said hopefully. "the Population Two people are as vulnerable as we are, only to the Population One."

The guard was goggling at us now, and the look of worry on his face was comforting. We were talking about

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things that he didn't want to think about. I turned to smile at him. Mistake. He glowered at me and backed away, his weapon stiffly at port-arms, no expression at all on his face any more. But that was a kind of confirmation, too.

"On the other hand," said Edna Valeska, "if the Population One people were going to do anything for us they had every chance to warn us. They didn't do that."

That was true enough, and I began to feel as discomfited as the guard. "So what's the other fact we know?" I asked.

"The Soviet Union is their principal enemy."

I said, "Yes, so it seems. But that's hard to believe! After the nuke war, when the Chinese did the decapitation bit in 1960, bombing Moscow and Leningrad—"

"Right, Dom," Colonel Martineau put in, "but, you see, in their time that didn't happen. We've pieced that all together, from the things we found out when we were questioned. The Soviets had only one big outside war. Around 1940, I think. They got into a war with Finland, and the Germans got involved—"

"The Germans!"

Martineau nodded. "The Germans didn't have their revolution. A man named Hitler took power, and the war was pretty bad. The Russians won, and after the war they occupied most of Eastern Europe, under their leader, Joseph Stalin."

That was toughest of all to swallow. "Now, wait a minute! I know who Stalin was! He ran the country for a while until his assassination. His grandson's a friend of mine, as a matter of fact. He's the Russian ambassador to the U.S. We play bridge. He's a good friend of—some friends of mine," I finished, not wanting to mention Nyla Bowquist. I caught a glimpse of the guard, more cautious this time, but once again definitely listening. "Old Joe," I lectured, "was killed by some kind of Georgian separatist underground. And the English had their general strike that turned into a revolution; they went socialist, the way they still are, and the Russian Litvinov got to be boss of the U.S.S.R. because he had good English connections. Had an English wife, as a matter of fact. And then, after 1960, the Germans had their counter-revolution and the Kaiserin came back, and now they and Japan are the big competitors. . . ." I trailed off. I wasn't scaring the guard any more. I was just boring him. Not to mention what I was doing to Edna and Colonel Martineau.

The colonel shook his head. "None of that happened in their time," he said. "For the last thirty-odd years they've only had two real superpowers, the Russians and the Americans. And they want to knock out the competition."

The guard wasn't only bored. He wasn't even listening any more. There was a faint stir from the front of the O's Club, and he was watching whatever was happening there. By then all of us in the room had been casting sidelong glances at our living litmus paper to see when what we said produced a reaction, and when it stopped reacting the conversation died.

"Oh, hell," said one of the junior scientists, and shrugged to say that it

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was a general comment with no specific follow-up planned.

Edna Valeska fretted, "Hell and *damn*. My husband's going to be worried sick. He never wanted me to take night duty. I wish I could let him know I was all right."

"I wish the same thing," I said.

The colonel nodded. "In my line of work my wife's had to get used to this kind of thing—well, not *this* kind of thing, I mean, but not being able to call her all the time. I know it's different for civilians. I bet you're worried about your wife, Dom,"

"What? Oh, sure," I agreed, and didn't add, *Her, too.*

They fed us again before noon. It was canned spaghetti and meatballs out of the dregs of the Officers' Club kitchen supplies, but there was plenty of milk and decent coffee. "Fattening us up for the kill," said one of the junior scientists gloomily, and, on cue, our new guard came into the room with his machine-pistol at the ready, followed by Nyla. Sergeant Nyla Sambok, that was, with two more armed privates at her side.

She looked us over politely. "If you'll finish your coffee," she said, "we're about ready to take you to more comfortable quarters."

"Where's that?" asked Colonel Martineau.

"Not far, sir. If you'll come along now, please." The voice was Nyla's own. So was the "please"—a nice touch, I thought, under the circumstances. The way her troopers unshipped their weapons to cover us wasn't. Whether we had finished our coffee or not, we moved.

We didn't have far to go. Outside the air-conditioned club the desert heat hit us all between the eyes, but we weren't in it long. Out the door. Across the wide and empty base street. Into the front door of the Cathouse, and clattering down a flight of steps to a big, cluttered basement room. Once it had been a pistol range. Now it was full of people with the green invader armbands, some OD-painted things like generators, but with heavy cables snaking outside to where we could hear Diesels thudding away . . . and a tall, rectangular screen of featureless jet black.

That was the first time I ever saw a portal. I didn't have to be told what it was. It was simply a blackness hanging in the air, almost big enough to fill the room side to side; and it was scary. Colonel Martineau snapped: "Sergeant! I demand to know what your intentions are!"

"Yes, sir," she agreed. "An officer will brief you. This is for your own comfort and safety, sir."

"Bullshit, Sergeant!"

But she simply agreed, "Yes, sir," and walked away. She was no longer around to answer questions, and the armed guards obviously had all their answers in their ammo clips.

I watched her go over to the side of the room, where my good old doppelganger-Dominic was standing with a man who looked somehow odd. Two ways odd. His face was vaguely familiar; and he seemed to be a civilian in borrowed fatigues, like me. He wore no rank insignia, like me; and like me he did not have a green armband. He was

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not a prisoner, though, because he was standing before a tall console, making adjustments to some sort of instrumentation. Major Dominic was watching him closely; so was an enlisted man with a carbine. His guard? And if he needed a guard, and wasn't one of us, who was he?

Nyla-the-Sergeant was getting orders from Major-me. She nodded and came back to us. "You'll be going through in just a minute," she informed us.

"Now, hold on, Sergeant!" snapped the colonel. "I demand to be told where you're taking us!"

"Yes, sir," she said. "The officer will explain it all." Martineau subsided, fuming. I took my turn.

"You're Nyla Christophe, aren't you?" I asked sunnily.

Blink of surprise. For the first time she looked at me as though I were a human being, not just a lump of captive meat to be moved around at will. The carbine in her hands remained steady. It wasn't pointed at me, exactly, but it only needed a quarter-turn of her body to zero in on my belly. "That's my maiden name," she agreed cautiously. "Do you know me?"

"I know the one of you that's in my time," I smiled. "She's my . . . friend. She's also one of the world's greatest violinists."

She looked at me curiously at "friend," but when I got her full attention was when I said "violinist." She looked at me searchingly for a moment. She gave a quick glance toward the major, then back to me. "What are you talking about?" she asked.

I said, "Zuckerman, Ricci, Christophe. They're the top three violinists in the world today. This world. Last night Nyla played with the National Symphony before the President of the United States."

"The National *Symphony?*" I nodded. "My God," she said. "I've always wanted— Are you bullshitting me, Mr. DeSota?"

I shook my head. "In my time you're married to a real-estate developer in Chicago. Last night you played the Gershwin Violin Concerto, with Rostropovich conducting. Two months ago your picture was on the cover of *People*."

She gave me a look, partly puzzlement, partly skepticism. "Gershwin never wrote a violin concerto," she said, "and what's *People*?"

"It's a magazine, Nyla. You're famous."

"It's true, Sergeant," chimed in the colonel, listening intently. "I've heard you play myself."

"Yeah?" She was still skeptical, but she was also fascinated.

I nodded sincerely. "What about you, Nyla?" I asked. "Do you play the violin?"

"I teach it," she said. "I did until the call-up, anyway."

"So you see?" I exclaimed, beaming, "And—"

And that was as far as it went. "Sergeant Sambok!" called a captain, standing by the screen. "Move them out!"

That was the end of it. She was all business then, my Nyla. If she looked at me at all again, it was with the same impersonal interest that the hammerman in an abattoir might give a steer coming up the ramp. "Move on, please,"

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she said to all of us, but this time the "please" meant nothing at all.

"Now, listen, Sergeant," Colonel Martineau began, but she was having no more of it. She gestured with the carbine. The colonel looked at me and shrugged. We moved. We lined up in single file, along yellow lines that had been painted so recently on the floor that parts of them were still tacky. There was a broad yellow stripe just before the ominous blackness, like the wait-here line at a customs counter in an airport. The new captain stopped us there, one eye on us and the other on the vaguely familiar civilian.

"When I give the word," he said, "you'll just walk straight ahead through the portal, one at a time. Wait until you are called; that's important. You'll find the other side is the same level as this one, you don't have to worry about stumbling or anything. Anyway, there will be personnel on the other side to help you if necessary. Remember, only one at a time—"

"Captain!" rapped Colonel Martineau, summoning up one last effort, "I demand—"

"No, you don't," the captain told him, not rudely, just as anyone with a tricky job might tell somebody else to butt out until the job was done. "You'll have a chance to make any complaints on the other side . . . sir."

The "sir" was an afterthought. The tone made it clear that it wasn't to be taken seriously. The captain was a lot more interested in the civilian at the console than in anything any of us might say.

The civilian was interesting enough, actually. He was obviously making some sort of complex balancing adjustment. It appeared that he was trying to keep a red dot on one scale opposite a green one on another. When the red dot drifted away he turned knobs until he got it back. When they were together he called over his shoulder, "Move them out!"

And Dr. Edna Valeska, looking as though she were praying, cast an imploring look over her shoulder at us, shuddered and walked into the blackness, where she simply disappeared.

All the other eight of us sighed at once. "Next," rapped the captain, and Colonel Martineau followed. The black swallowed him up with no more trace than it had left of Edna Valeska.

I was next in line.

I was standing no more than six feet from the mystery civilian. He gave me a quick look over his shoulder.

And I twigged. Skinny, far more harassed-looking, but the same man. There was no question about it. "Lavrenti!" I exclaimed. "You're Ambassador Lavrenti Djugashvili!"

His guard snapped, "You crazy? Don't bother Dr. Douglas now?"

"Wait a damn minute," protested the civilian, "You! What did you call me?"

"Djugashvili," I said. "You're the Ambassador of the Soviet Union, Lavrenti Djugashvili."

He looked at me fretfully for a moment. "My name's not Djugashvili," he said, returning to his board. He juggled dials for a moment, before nodding to the captain to scoot me through the portal. "But my grandfather's was," he called, just as I stepped into the blackness.

* * *

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When I was a kid I had an active fantasy life, and it concentrated on two subjects. One was space travel. The other was sex. The principal reason I wanted to become a scientist, back as a sophomore at Lane Tech, was so I could visit other worlds; I never lost that fantasy, exactly, it just sort of slowly evaporated away over the years.

The other I never lost at all. I had the best collection of dirty books on the Near North Side. Porno flicks hadn't got out in the open yet, but there were places where you could pay two dollars and get into the back room of a coin-machine arcade or a sleazy bookstore and watch grainy black-and-white films from Tiajuana and Havana. (For a long time I wasn't entirely sure that a man could make love to a woman without wearing black calf-length stockings and a mask.) I traded lies with all the other guys in the chess club and the tennis team, and I put myself to sleep every night in the time-honored adolescent way, with my imagination carefully writing the scenario of the perfect seduction: the gossamer negligee, the chilled wine by the bed, the silken sheets. . . .

And then came the Fourth of July. Peggy Hofstader.

Her apartment house was near enough the lake to watch the fireworks, and there was nobody on the roof but us, and I'd managed to score two bottles of warm, nasty-tasting beer. And when the fireworks were blattering out their rackety-bang, all-over-the-sky finale, and I felt Peggy's hand reaching toward where no hand but mine had ever gone before, I realized my bluff was called. Fantasy had suddenly become real. All unprepared, I was making my debut, and what did you do with all those arms and legs and parts and places?

It was a good thing for me that Peggy knew my lines better than I did. I needed all the help I could get.

There wasn't anybody to help me now.

In a wholly different way, I was up against the same shuddery, scary, exciting thing. There was another world on the other side of that blackness.

I took a deep breath. I closed my eyes. And I walked into it.

What did it feel like?

Mostly it felt like nothing at all. I've been to a couple of science fairs where they had air doors separating the rooms, currents of ascending air mixed with water vapor so it looked as though a cloud were hanging in the doorway; they project pictures or advertising messages on them, and you walk right through them. This felt like even less of a world-crossing transition than that. It was just that at one moment I was in a shooting range in the basement of a building, noisy, filled with people, lit by banks of flickering fluorescent lights. . . .

And then I took a step, and suddenly I was at the bottom of an excavation. I stood on duckboards, in the hottest August sunlight New Mexico can produce. Scaffolding rose around me, supporting curious machines like TV cameras with round wire shields over where their lenses ought to be. A cherry-picker stood idle beside one of them, with a man idly looking down at me from the cup. Scooped-out sandy walls surrounded me. A roaring truck motor was breaking my eardrums just a few feet away.

I didn't have time to study the scene.

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There were two soldiers standing there to grab my arms and pull me forward. "Into the truck," one of them ordered, and turned to get the next prisoner who came stumbling through. I climbed into the truck—unremarkable Army six-by-six with board seats around the sides and a soldier manning a light machine-gun, pointed toward us, squatting on the cab. When all nine of us were aboard the truck motor roared even louder; the vehicle jerked forward, and we climbed up out of the excavation onto a mesa where two Army helicopters stood by, their rotors slowly turning. "Out," ordered the guard, who had followed us into the truck, and one by one we jumped down as the truck roared away. The guard who did the talking, watching us carefully, backed away to exchange a few words with the pilot of one of the helicopters.

We all loked at each other.

We were up in bare, sandy hills. I could see the barracky buildings of an actual Army base a mile or so across the mesa—the original Sandia, I supposed. Nearer there was a tractorless OD-painted trailer body, windows showing that it was some kind of an office, on the lip of the excavation. And across the excavation there were two or three other trailers, but not offices: they carried generators, thudding away, and the cables went straight down to the machines at the floor of the pit.

I was gasping from the sun in a minute, and so were the rest of us, but we were all too keyed-up to worry about heatstroke. Edna Valeska tugged at my sleeve. "They had to dig to get down to basement level," she said pointing.

"What?"

"They wanted to come out in the basement of the building," she explained, "and there wasn't any building here. So they had to dig."

"Oh, yeah." It didn't seem important—to tell the truth, I'd had too many things to react to; I didn't know what was important and what was not any more. I could see two more figures appear out of the black rectangle—Nyla-the-Sergeant, and the man who looked like, but said he wasn't, Djugashvili. They exchanged words, and Nyla turned away to get into a jeep. "What about the scaffolding?"

"At a guess," said Dr. Valeska, "that was a matter of positioning, too. They wanted to bug us. To look into the laboratories. Some of them were on the top floor."

It sounded rational enough, though I was no longer sure about what constituted rationality, either. One of the juniors put his finger on the central question.

"What do you think they're going to do with us?" he quavered.

Nobody had a good answer to that. Colonel Martineau came closest. "I think that's what we're going to find out from the sergeant," he said, as Nyla Sambok's jeep spun sand from its wheels as she parked it behind us.

She didn't tell us, though—at least not right away. She was called, scowling, over to the colloquy between the guard and the copter pilots. "Colloquy" was too mild a word; it was becoming a straight-out argument, and they weren't keeping their voices down.

We didn't have to wonder long about the subject of the disagreement. It was like that old puzzle of the missionaries

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and the cannibals crossing a river. Each helicopter could hold five persons besides the pilot. There were nine of us—nine prisoners—and one guard made ten. Two loads. Only neither of the pilots was willing to take a chance with carrying five of us enemy maniac desperadoes without an armed guard.

"Aw, *shit,*" said Sergeant Sambok at last. "Get on with it. You take four, you take four, and I'll keep the odd one here until one of you gets back." And as they grudgingly started loading us into the choppers, she spun and pointed to me. "Leave that one," she said. "I'll hold him for the next trip."

"Sure, Sarge," whined one of the guards, "but the major said—"

"Move it," ordered Nyla. And they did. When the choppers were airborne she turned to look at me analytically. I guess I didn't look like too much of a problem for a healthy woman with a carbine to deal with. She gave a short nod. "No sense in frying our brains out here," she said. "Let's get inside the trailer."

The blessed thing was air-conditioned.

It was also empty; apparently it was for the use of the helicopter people, and there weren't any of them left. She let me go in first and waited until I was well clear of the doorway before she followed. She moved into a corner and expertly flipped a couple of quarters out of her fatigue pocket to me. "There's a Coke machine over there," she said. "I'm buying. . . . Open it and put it down on the table," she added, and then added one more thing, "—please."

She sat back and took a long pull at the Coke, watching me. I did the mirror-image same. At close range, with just the two of us there in the room, she looked more like my Nyla than ever. Oh, sure, wearing some sort of get-up for a Hallowe'en party. But Nyla Christophe Bowquist, to the life.

She wasn't, of course. She was Nyla Somebody Else. But whatever name she went by, she looked as pretty and as desirable as my Nyla ever had, and that was very much. I don't mean just sexually, though there was all of that; but there was more than that, too. I *liked* her. I liked the half-humorous perplexed look she gave me. I liked the way she leaned back, with her breasts making her fatigue blouse look like a couturier creation. And when she spoke, I liked the sound of her voice.

"What about it, DeSota? What is that stuff you were telling me?"

"You're a concert violinist, and one of the greatest who ever lived," I told her.

"Don't I wish! I'm a music teacher, Mr. DeSota. I admit I always wanted to be up there with an orchestra. But I never made it."

I shrugged. "You had the ability," I said, "because in my world that's exactly what you did. And one other thing I didn't tell you about you in my timeline . . . and me."

She gave me a funny look. She didn't say the word "what?" She made her eyebrows say it for her.

"We were lovers," I answered. "I loved you very much. I still do."

She gave me a different kind of funny look. There was surprise in it, and suspicion. But it was also tentatively pretty warm. It was almost a singles-bar kind

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of look, though I didn't think this Nyla was any more of a singles-bar person than my own. I know what the look was. It was the look that Roxanne must have given Cyrano de Bergerac when she found out that it was he, and not that dumb hunk Christian, who had written her those lovely letters; and she said: "That's a new one on me, DeSota."

"It isn't a line, Nyla."

She thought for a moment, then looked around and grinned. "Under the circumstances," she said, "it might as well be. Let's talk about something else. What's this about a Gershwin concerto? He died young, you know." I shrugged; I really didn't know much about him. "He left a lot of good stuff," she went on, watching me get up and pace over to the window. "All the pop stuff, of course. And then the Rhapsody in Blue, the Concerto in F, the American in Paris . . . but honest, he never wrote anything for violin."

I was looking down at the portal, where the not-really-Djugashvili was playing with the same sort of console he had on the other side. I shook my head decisively. "Wrong, Nyla. Absolutely wrong. I'm not expert in classical music, that's for sure. But some rubbed off from hanging around with you—with the other Nyla. The Gershwin I've heard many times. It's full of melodies, which makes it easier for a guy like me. I think I could even whistle it—wait a minute." I walked around, trying to remember the lovely, rippling open theme Nyla played so beautifully on the solo violin. When I managed to try it I knew I didn't do it justice—but it's the kind of definitively beautiful music, like some of the Mendelssohn and Tschaikowsky, that sounds good even when it's butchered.

She frowned. "I never heard that. But it's pretty nice."

And she pursed her lips to try it herself.

And I leaned forward to her puckered lips and kissed her.

She kissed me back.

I'm nearly sure she kissed me back. I could feel those nice, dry, soft, warm lips opening under mine, but I didn't wait to make sure. I gave her the edge of my fist on the back of the neck, as hard as I'd ever done in the judo class.

She dropped like a rock.

That sort of hand-to-hand combat was all theory to me. I'd never done it before except as ritualized exercises. I hadn't planned to do it then, although one part of my brain, all along, had been screaming to me that Nyla's fatigues and my fatigues were absolutely indistinguishable, bar the fact that she wore a green arm-band and carried a carbine, and I had neither.

When she fell I was not absolutely sure I hadn't hit her too hard.

But when I put my hand on that familiar breast under that very unfamiliar fatigue blouse I could feel that the heart and lungs were going strong.

"I'm sorry, sweet," I said. I pinned her arm-band onto my sleeve. I took her carbine off the floor and slung it over my shoulder; and I left without looking back.

At the age of seventy-three, Timothy McGarren had been doorman at Lakeshore Towers since the day it opened its doors and he turned in his retirement papers to the Metropolitan Transport

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Authority. They were the same day, and both were ten years in the past. He had made the trip from curbside to elevator so many times that he could do it in his sleep, or walking backwards. Sometimes, like now, holding the doors for Mrs. Spiegel from 26-A, he actually did do it backwards, feeling with his foot for the bottom step. Only there didn't seem to be one. He overbalanced, grabbed for the railing, missed, and dropped into thirty feet of water, with the lights of the Chicago skyline blinking at him over a hundred yards of Lake Michigan water.

24 August 1983
12:30 P.M. Major DESOTA, Dominic R.

This base we had captured was stuffed fuller of goodies than a Christmas stocking. The goody I appreciated most was the Base Commandant's office. It had its own private Base Commandant's dining room, with kitchen attached; and in the Base Commandant's private freezer the cooks had discovered half a dozen of the thickest, juciest, most marbled steaks I had ever put a tooth to. It came out even. There were six of us to eat them. Lieutenant Colonel Tempe, heading the nuke research detachment; the MP major, Bill Selikowitz; the Signal Corps captain; two other captains who were Tempe's adjutants; and me. We were the most rank on the base—on our side, anyway—and rank had its privileges. We ate off a linen tablecloth with linen napkins and sterling silver, and if the glasses had only water in them, at least they were Danish crystal. Outside the big picture window on the fifth-floor dining room of the base headquarters we could see the sixty-odd buildings we had captured, with Selikowitz's MPs patrolling in their jeeps. It was hot out there, but in our little castle the air-conditioning was working just fine.

We were six happy guys.

One of Colonel Tempe's adjutants was chortling over the dumb projects they'd uncovered—a group of weirdos trying to read the enemy's minds; binary chemical weapons of the kind we'd tried, and discarded, five years before; laser guns that would fry an enemy soldier at a distance of three miles, provided he stood still for at least ten minutes without ambling out of the beam.

That was the comic relief. These people had wasted more money on dumb ideas than we had. But not all their ideas were dumb! By the time we got to the apple pie and ice cream Colonel Tempe was telling us the serious stuff. The rest of us listened hard; in another forty-eight hours it would no doubt be classified down to a whisper, but we were getting it right from the source. At nuclear weapons these people had us outclassed six ways from Sunday. "Cruise missiles," he said. "Like little jet planes that come in under the radar, too fast to be intercepted, with built-in maps so they always know where they're going. Multiple warheads; you launch them in one piece and they separate, ten miles up, and six different missiles hit six different targets. And *submarines*."

That took me by surprise. "Submarines? What the hell is special about submarines?"

"These are nuclear-powered, DeSota," he said grimly. "Big bastards. Ten thousand tons and better. They can

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stay underwater for a month, where the enemy can't find them; and each one of them carries twenty nuclear missiles with ten-thousand-mile range. Jesus! Never mind your damn sneak-attack biologicals! If we could get just one of those damn submarines through a portal the Russians'd have to lay down and die for us!''

Suddenly the pie didn't taste as good any more.

''But we walked right over them,'' Selikowitz objected.

The colonel nodded. ''They weren't expecting us,'' he said. ''Now they know where we are.''

''Oh, come on, Colonel,'' I put in. ''They're not going to nuke their own base?'' It was meant as an argument, but halfway through it turned into a question.

Nobody wanted to answer it. Not even the colonel. He attacked his pie in silence for a moment, then burst out, ''We're doing this all wrong, damn it! We should've gone right for the top! Hit the White House. Grab their President. *Tell* her what we were going to do, and then it's all over before the Russians and their damn satellites begin to get curious about this damn 'archeological dig' out in the desert!''

They were all looking at me; I began to wish I hadn't opened my mouth. Who was I to defend the decisions of the Chiefs of Staff? All of us knew how hard the debate had raged, and none of us, especially not me, had had any voice in which way the vote went.

Still—

''Colonel,'' I said, ''let's look at facts. Fact one. It doesn't matter what kind of weapons these people have, they can't use them against our interior because *they can't get at us*. The only way they could do that would be with a portal, and the reason we came here first was to preempt the possibility they'd build one.''

''They were nowhere near,'' complained one of the adjutants.

''They might have made it pretty fast,'' I said. ''Once they knew it was possible that answered a lot of questions. We couldn't take that chance. Now we've got this base, and there's no way they can retaliate against us—whatever we do.''

The colonel looked at me hard, then gave me a frosty grin. ''You're a good company man, DeSota,'' he said, and tapped his empty cup with a fingernail. It rang out, like the bell at the end of a round. It was the very best china.

I was willing to let the argument stop there. The colonel was right. But he was also wrong: we'd taken over Sandia with no casualties at all, not counting one guard with a broken arm because one of Selikowitz's MPs had been a little too rough with the hand-to-hand combat. If we'd stormed the White House there would have been people dead. On the other hand—

On the other hand, there were too many other possibilities for me to figure out. The weaponry these people had! If we could just take back that submarine—or some of those multi-warhead and cruise missiles—

But we didn't have the power, on this side of the portal, for anything that big. We could take blueprints, sure. Even any of the weapons, part by part. But sooner or later the Russians were going to take a closer look at that big hole in

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the desert we'd called an archeological survey site, and if they saw weaponry. . . .

"Major?" The pretty private who was filling the coffee cups was also distributing flimsies to some of us. "These came while you were eating," she said.

"Thanks," I said, and couldn't help grinning. There was only one for me, but it was a TWX from the President of the United States!

It said:

"On behalf of the American people I commend you and the officers and enlisted personnel of the 456 Special Detachment, A.U.S., for meritorious service over and beyond the call of duty."

I looked around the table, grinning in spite of myself. No matter that all the others were grinning, too—they'd got their own commendations, no doubt. Never mind that the President probably—no, undoubtedly!—hadn't written it himself, doubtless didn't even know my name; it was a canned citation from the War Department, of course. Never mind that the President was the weak-kneed jerk he was—*I* never voted for the son of a bitch. All the same! A commendation, by name, from the President was going to look very good in my 201 file. And there was more. Six medals! A Legion of Merit for me. A Bronze Star for Sergeant Sambok. Four others to pass out to whoever I chose to name.

It was not a bad morning's haul; and the only thing wrong with it was that Bill Selikowitz had got more than the rest of us. He was frowning over something the orderly had muttered in his ear, and when he looked up it was to me. "Dom? My patrols have just picked up one of your guys, coming toward the base at ninety miles an hour in a stolen car, with an Albuquerque cop right behind him. Private Dormeyer. He took off for town without leave, and it looks like he tried to kill a civilian."

What I wanted was Sergeant Sambok, because she knew the whole detachment. I couldn't have her. She was on the other side of the portal, escorting the prisoners, and there was some technical malfunction and the portal was down.

What I had was my adjutant, Lt. Mariel, fresh out of OCS and about as much use as two tails on a cow. She was waiting for me in my office. "What —what are we going to do?" she managed to get out, and remembered to add, "sir?"

"We're going to clean this up," I told her. "Damn it, Lieutenant! I wanted Dormeyer brought back quietly!"

"They couldn't find him," she said abjectly. "I sent Privates Weimar and Milton to his home address, but he wasn't there—and you know, sir, the city's real messed up, with some of our troops guarding communications points and nobody knows if the enemy's going to react—"

"Save the excuses, Lieutenant," I ordered. I'd forgotten that Dormeyer was a local boy—in our time, anyway. That wasn't too good; a commanding officer is supposed to know his troops. "An adjutant's supposed to know the troops," I told her. "Was Dormeyer acting suspicious in any way before he took off?"

"No, sir! Not that I know, sir. He did get a seven-day compassionate about

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a month ago, sir—wife was killed in a car smash. I suggested dropping him from the unit because he'd missed training, but you said to keep him in—''

''Get him in here,'' I said. ''I'll talk to him. No, wait a minute—let me talk to the cop first.''

I didn't need this. I didn't want my commendation spoiled. I didn't want old General Ratface Magruder getting on my case because some asshole private got himself into trouble. The one good thing I knew was that Bill Selikowitz turned the whole thing over to me; there wouldn't be anything on paper—

Provided I could handle it. And when I saw Officer Ortiz that began to look possible. He was a big, square, old-time cop who wore his Smokey the Bear hat as if it had grown there and looked around my office as though he owned it. ''Never been in here before, Major,'' he said. ''I guess you know there's a lot of questions being asked about what you guys are doing.''

At least he hadn't come in breathing fire and demanding the perpetrator. I said, easy man-to-man talk, ''I guess guys like you and me just have to follow orders and let the people on top worry about why, right? Have a cigar.'' When he took two I could see the talk was going the right way. I had more than half expected that he would give us an argument on the basis of local law, or jurisdiction, or anything that would make enough trouble so I couldn't deal with the poor slob Dormeyer's troubles myself. I needn't have worried. Ortiz was used to getting along with whomever had the reins of power. He was forty or so, twenty years on the force; he'd seen everything and been fazed by none of it. He'd got a call while patrolling in his radio car in a part of Albuquerque our troops hadn't bothered with, so he entered the home of Mr. and Mrs. Herbert Dingman. He found the elder Dingmans away, their daughter Gloria Dingman hysterical, a Mr. William Penderby groggily coming to on her bed, where he'd been just about strangled by our own Private Dormeyer. It wasn't too big a deal. What made it touchy for Officer Ortiz was that on the way in he'd walked right by Private Dormeyer, sitting dazed at the wheel of the Dingman girl's car, and by the time Ortiz figured out that was the man to arrest, Dormeyer had jumped the ignition and was on his way back to base. And, no, he wouldn't mind waiting around while I interviewed the perpetrator, only would it be all right if he phoned in to let the station know where he was?

Certainly I wouldn't mind. I didn't slap him on the back, but I walked him to the door, and ordered Lieutenant Mariel to get him to a phone as soon as she got Private Dormeyer into my office.

Give him that much, he wasn't a bad soldier. He'd come out of whatever craziness had driven him up the wall. He stood at a brace and answered all my questions clearly and briefly. Yes, he'd gone AWOL. Reason? Well, he'd been really shaken up by his wife's death and somebody told him that there was an exact copy of every one of us in this time—so he'd gone looking for his copy of her . . . and finding her there, and alive—and with this other guy in her

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bed!—had been more than he could handle. No, he hadn't killed the man. Gloria had dragged him away and he'd gone outside to sit in the car and cry. And when Officer Ortiz reported that the victim was no worse than bruised I saw daylight.

I sent Dormeyer back to duty with a warning; I did, this time, pat Officer Ortiz on the back; and I turned him over to Selikowitz's MP corporal. "Escort Officer Ortiz back to his car and let him go," I ordered. "Make sure he knows we're here as friends, not invaders." And to Ortiz, with half a wink, "You mind a suggestion, Officer? You'll be the first from your side to come out from our occupied zone, so you're going to get a lot of attention from the TV news people. Don't let them get you for nothing!" And I watched him go with satisfaction, and turned back to the real world.

It was like ice water in the face.

The portal was in service again. Messages were coming through. The hottest one was for me: I was ordered to report to Tac-Five on the double. Our prisoner, the other Dom DeSota, had escaped to some other time-line, they didn't even know which one, and he'd taken our pet scientist, Dr. Douglas, with him.

The last time I had been on the home side of the portal it was dark night. We followed the tapes along the sandy duckboards, with no more light than the blue riding lights from the trucks that had brought us down, stumbling, choking on the dust, shivering from the desert night-time chill—scared. Up on the mesa the big troop-carrying helicopters were landing with no more lights than the trucks. Hand-held flashlights guided them in with their second-echelon soldiers and the specialists who would follow to set up a portal generator, none of us sure what we would find.

Now it was all different. Hot sun baked the duckboards. A desert wind peeled plumes of sand from the lip of the excavation right down into my eyes. Ratface Magruder was pacing up and down in front of his staff car, waiting for me. He thumbed me inside and we spun sand all the way up to the mesa. There I could see that bulldozers had smoothed away even the skid marks of the helicopters, so that when the Russian satellites came over they would see nothing to make a lie out of the archeological-excavation story.

One thing was the same. I was scared.

I was scared in a way I had never been before, because fear of getting shot at or having to shoot somebody else is a physical fear that you can turn your mind away from, at least for a while. What I was afraid of now was not a speculation. It was a fact. If the Senator escaped, he was at least helped in the escape by the fact that he was wearing GI fatigues. And I had given him the fatigues.

Magruder didn't say a word to me on the way up. He didn't even look at me. He was glaring out the window, his lips tight. I couldn't blame him, exactly; his ass was in the wringer along with the rest of us. I made myself stiff as a statue, hanging with all my strength to the seat belt I didn't dare buckle, to keep from being thrown into him.

Hoping he would forget I was there.

We stopped with another spray of sand and Magruder jumped out. He

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stood there, glaring. What he was glaring at this time was Sergeant Sambok and the civilian technician, Dr. Willard, assistant to the missing Dr. Douglas. He'd left them standing at attention in the sun while he went down to get me in person. Sunstroke? I don't know how they missed it. It wasn't a thing that General Magruder would have worried about, because the sun would never bother him. He was meaner than the sun. He kicked a clump of buffalo grass, spat and jerked a thumb at the trailer. "Inside, you three," he ordered.

It wasn't any better inside the trailer. It was cooler, but not so much because of the air-conditioning as because of the chill that came from Magruder. When he looked you in the eye, your eyeballs froze. With all the worry I had myself, I had a little left over for Sergeant Sambok. Maybe even for Dr. Willard, too, because he wasn't even in the service. He'd just happened to be standing on the scaffolding with Larry Douglas when the make-believe me came puffing up with the carbine over his shoulder, pushed Douglas through the upper portal and jumped after him. There hadn't been a thing Willard could have done about it—thought that didn't seem to interest General Magruder—because he was a little guy and, like all the civilians on the project, unarmed.

Nyla Sambok was a different case. She answered Magruder's questions briskly and completely. "Yes, sir, the Senator was my prisoner. Yes, sir, I allowed him to overpower me and take my weapon. Yes, sir, I was negligent. No, sir, I have no excuse." —But "completely" is the wrong word, because there was something in her tone, and something in her eyes, that said there was more to it than that. Once I'd sat on a rape court-martial, a nurse captain who'd been caught out on the obstacle course one night by a goon draftee who thought that all women really wanted it, no matter how hard they resisted. The captain had looked the same way. Full of resentment and fury, and as much against herself as against the trainee.

Of course, there couldn't have been anything like that with the other Dom DeSota? —and then Magruder turned to me, and I forgot all about Sergeant Sambok's troubles, having plenty of my own.

Not ninety minutes before I'd been sitting in judgment on Private Dormeyer. Up and down the yo-yo goes.

They called him "Ratface" Magruder for a good reason. Not much chin and a hell of an overbite; and to make it worse he wore a stick-out mustache with more wax in it than hair, under a long, pointy nose. I could almost see the nose quivering as he sat there, thinking, frosting us all as his gaze moved around, tapping with his fingers on the leather cushion of the couch. He kept us waiting while he thought things through.

Then he said, "There are some things you should know."

We waited.

"The first thing," he said, "is that their fucking President hasn't given us any answer to President Brown's message, so we are going to have to implement Phase Two."

We waited some more.

"The second thing is that I had requested an HU-70 troop-carrying heli-

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copter to transfer the prisoners. I was overruled, because somebody was worried about the Russky satellite seeing it, so they sent those chickenshit little choppers instead."

We waited some more, only with a little less foreboding of doom—was he saying that there was some excuse? Because if they'd sent the right helicopter all the prisoners would have gone at once, and the problem would never have arisen. It wasn't much of a hope, but it was the best I'd had for a while—and a blighted one, because of course he wasn't excusing us, he was just rehearsing the story he was going to cover his own ass with. He said:

"Make no mistake. You three are still in the deep shit. You, DeSota, because you gave him a uniform. Shut up—" as I started to explain. "You, Sergeant, for letting him get your weapon away from you. And you, Willard, for letting that son of a bitch Douglas play around with the portal in the first place without a senior officer present. Not to mention letting the two of them get through."

"General Magruder," said Willard desperately, "I am here as a civilian consultant, and if there are any charges to be brought against me I have the right to have a lawyer present. I demand—"

"No, you don't," Magruder corrected him. "What you do, Willard, is you volunteer to accompany these two, who are now ordered to Bolling Field."

"Bolling Field?" cried Willard. "That's Washington, D.C., isn't it? But—"

Magruder didn't tell him to shut up. He didn't have to; he looked at him, and the objections froze on Willard's tongue.

Outside I had heard the flutter of a chopper's rotors. As Magruder opened the door I saw it sitting there, the vanes turning slowly, the pilot peering out toward us.

"That's yours," said Magruder. "It'll take you to the airport where a MATS C-111 is waiting for you. Phase Two is about to begin."

When the old man, peering out of his apartment door, could hear no noises on the stairs he scuttled down to the mailbox. The precious brown envelope from the Welfare was there. He retrieved it, hurried back up the uncarpeted steps, let himself in and snapped all three locks behind him. Now if he could just make it to the Seven-Eleven he would have food and money for the next weeks. He did not even feel the faint puff of—something—that touched him; but as he turned he saw that his apartment had been ransacked! In just that minute, the old TV was gone, the shelves over the stove in the kitchen alcove had spilled out their sparse contents, the worn couch cushions were thrown on the floor. Moaning, he opened the door to his bedroom to see if his precious hoard of papers had been touched. . . . There was someone in his bed. A man. With his throat cut and his eyes glassy; the face was contorted in fear and pain . . . and the face was his own.

24 August 1983

4:20 P.M. Mrs. Nyla Christophe Bowquist

I should have been on my way to Rochester for pre-concert publicity spots. I couldn't leave Washington. The whole crazy day zipped past flick-*blur*, and my flight time came and passed, and Amy

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rebooked me on an evening flight, and I told her to cancel that one, too. I did what I always did when hopelessly confused and shaken up and worried. I practiced. I propped up the piano reduction of the Tschaikowsky orchestra part in front of the television set, and I played the concerto. Over and over; and all the while my eyes kept getting pulled to the screen, where every twenty minutes or so they repeated that insane broadcast from the night before and Dom—dear Dom, my love, my bedmate, my co-adulterer Dom—was sitting up there with that greasy smile on his face, introducing that imitation President of the United States, saying those incredible things. Normal programming was abandoned, but there was no real news, either. The alien troops in New Mexico held inside their occupied areas, ours did not attack them, no one in Washington would say anything tangible.

I was not the only person wholly confused and disoriented in Washington that day. Even the weather was miserable; there was some kind of a hurricane working its way up the coast, and what we were getting out of it was muggy heat with spats of soapy rain.

The phone kept ringing. Jackie called twice. Both of the Rostropoviches called; so did Slavi's concert-master, so did old Mrs. Javits—so did everybody who had any suspicion that I had a personal interest in Senator Dom DeSota, and none of them said anything embarrassing, and they were all very kind. Ten minutes after I hung up on each conversation I couldn't remember anything that had been said. The good thing was that the newspapers didn't call. That much of our secret was safe, Dom's and mine.

I spared a moment to be sorry for poor Marilyn DeSota, sitting in her penthouse with her phones going every minute, and wondering what the *hell* was going on with the man she was married to.

Yes, I spared a moment to be sorry for my lover's wife. It wasn't the first time. It was only the first time that I'd let myself dwell on it for more than maybe half a second—for as long as it took me to tell myself that Dom's infidelity was, after all, his responsibility and not mine.

I made myself believe that, usually.

And Amy kept coming in . . . with tea; with made-up questions about what dress I wanted to wear in Rochester, and did I remember I had a *Newsweek* interview scheduled for tomorrow morning in Rochester, and what the concert manager from Rochester had said when he called and I wouldn't talk to him.

I hadn't forgotten the concert, of course.

In a way, I was working at it harder than I would have been if I'd been on the scene. They were bringing in Riccardo Muti to conduct, and we had a difference of opinion. I wanted to do the Tschaikowsky, and he had agreed to that, but I wanted to play it without the usual cuts. Muti was resisting. That's a conductor for you. Get the damn concerto out of the way so you can get back to having the whole orchestra under your personal thumb, instead of sharing it with some damn instrumentalist. I'd had the same squabble every time I played the Tschaikowsky for a long time, and usually I gave in. This time I didn't want to.

So I played it all the way through,

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twice, and drank a couple of cups of cooling tea, and then I played it some more.

The trouble with that was that my fingers thought about the music, but my mind was flying in all directions. *What* was Dom doing? Couldn't he at least telephone me? Was it *possible* that this crazy Cathouse project he'd joked with me about was somehow *real?* And what was I doing with my own life? Every now and then it would occur to me that if I wanted to start having a baby, it was none too soon to get on with it. . . .

But whose baby did I want?

I tried to make myself think about the music, while those sweet, lush, gut-stirring Romantic themes came floating out of the Guarnerius. Tschaikowsky had had his own troubles. With the concerto, for instance. "For the first time one must believe in the possibility of music that stinks in the ear," one critic had said at the premiere. How could you live after a review like that? (But now it was one of the best-loved concerti in the repertoire.) And his own life had been worse screwed-up than mine, in the non-musical ways—politics aside—*maybe* politics aside, because certainly there was a Byzantine flavor to the jockeying around the Czar's court. He'd done worse with marriage than I had: tried it once, and had a nervous breakdown as a result. He'd had his twenty-year love-letter torrid romance with Nadejda von Meck without even once meeting the poor woman, running out of the back door of a house when she unexpectedly showed up at the front. Crazy Peter Ilyich! They said that he first intended to become a conductor. But it didn't work out, because he began leading the orchestra with the baton in his right hand and his chin held tightly in his left, because somehow he'd developed the conviction that if he let go of his chin his head would fall off.

Crazy Peter Ilyich. . . .

Sping went my E-string, the second one I'd broken that morning. I grinned in spite of myself, thinking of something Ruggiero Ricci had said to me once: "A Strad you have to seduce, but you can rape a Guarnerius." Only I'd raped it a little too roughly.

At once, Amy popped in the door. I didn't ask if she'd been eavesdropping. Of course she had. I handed the fiddle over to her, and she examined it carefully before beginning to take the broken string off. "Might as well put a whole new set on," I suggested, and she nodded. I went on daydreaming while she opened a fresh packet. Crazy old Peter Ilyich, I thought again—only what it turned into was, "Crazy Nyla Bowquist, what are you doing with your life?"

I sucked on my fingertips, thinking. They were sore. They weren't bloody —you can't cut my left hand's fingertips with anything much less than a chisel any more—but they hurt. I was hurting in a lot of places.

I said, "Amy, where do you suppose my husband is now?"

She looked at her watch. "It's pushing five here—going on four back home—I suppose he's still in his office. Do you want me to get him for you?"

"Please." Even when somebody else was paying for it, Ferdie didn't like me running up huge long-distance bills, so we had this special line to use—only Amy was better at remembering all the

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numbers you had to dial than I was. It took her a minute or two.

"He was on his way to his club," she explained, handing me the phone. "I got him on the car phone for you."

I looked at her in a way that she immediately interpreted correctly. "I'll finish this outside," she said, taking the Guarnerius and the strings and the polishing material, and I said into the phone:

"Honey? It's Nyla."

"Thanks for calling, dear," came the warm, soft old voice. "I've been worried about you, with all that's going on—"

"Oh, I'm fine," I said, lying. "Ferdie?"

"Yes, dear?"

"I—uh—it's pretty wild around here today."

"I know it. I've been thinking you might have trouble getting a flight to Rochester. I suppose the airlines are all messed up. Do you want me to send the company jet?"

"Oh, no," I said quickly. What I wanted was not very clear to me, but I knew that wasn't it. "No, Amy's got all that sort of thing under control. The thing is, Ferdie dear, there's something I want to tell you." I took a deep breath, getting ready for the next words.

They wouldn't come out.

"Yes, dear?" said Ferdie politely.

I took another deep breath and tried a different way. "Ferdie, you remember Dom DeSota?"

"Of course, dear." He sounded almost amused. Well, that was a dumb question! There wasn't anybody in the country who didn't know who Dom DeSota was this day, besides which Ferdie had always made it his busines to know everybody with any kind of power in Illinois. "It's awful about him," he offered. "I know it must upset you to think about what he's involved in."

I swallowed. Of course he hadn't intended anything—when you've got a bad conscience, even "hello" is a double-entendre. I tried to imagine what Ferdie was hearing, from what I was saying. It seemed to me that I was giving an excellent performance of the wife who has something to confess but can't quite get the words out of her mouth, and maybe down inside my head somewhere that was what I was trying to do—to make Ferdie at last so suspicious that he would come right out and ask the questions that I would have to answer.

Only Ferdie wasn't getting suspicious. He was, if anything, getting tenderly, forgivingly amused at his flutter-brained wife who couldn't seem to remember what it was she was talking about. "Ferdie," I said, "there's something I wanted to talk to you about. You see, I've been—oh, what is it, Amy?" I asked, irritated, as she appeared in the doorway.

"Mrs. Kennedy is here to see you," she said.

"Oh, hell," I said. On the phone I could hear Ferdie's fond chuckle.

"I heard that," he said. "You've got company. Well, dear, at the moment we're double-parked in front of the club, and maybe you can hear the horns blowing. Let's talk later, all right?"

"That will be fine, darling," I said, frustrated, scared . . . and mostly relieved. Some day I would have to say

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it all to him, every word, every truth . . . but, praise God, that day was not yet. And when Jackie came in to tell me that she was going to carry me off to dinner—"Just family, really, but we want you to join us—" I accepted with gratitude.

It wasn't really a family dinner—none of the children was there—not even in the sense of political family, although Jack Kennedy's principal aide and his wife were at the table, because the only other guest was our old friend Lavrenti Djugashvili. Good host and gracious guest, sure, but I was surprised to see him, all the same. That made my presence a little easier to understand, because Lavi was a single man that evening and Jackie didn't like an unbalanced table. "No, dear Nyla," he smiled, kissing my hand, "tonight I am bachelor, because Xenia has gone back to Moscow to make sure our daughter is taking proper vitamin pills at boarding school."

"So what we are going to have," the Senator said, "is just a nommal infommal dinner, because we've all had all the excitement we need today. Albert! See what Mrs. Bowquist would like to drink."

It isn't just wealth. Ferdie is just about as rich as Jack Kennedy, but when we have a normal, informal, family dinner we don't usually have it in the dining room with a butler handing the dishes around. We have it in the breakfast room, and Hannah the cook usually puts the dishes on the table in front of us. The Kennedys were never that informal. We had our cocktails in the drawing room, with the portraits of the Senator's three deceased brothers looking down on us, and when we went into the dining hall there were old Joe and Rose looking down at us in oil from that wall. The wines were all estate-bottled, and the silver wasn't silver. It was gold.

And, actually, the whole thing did just what Jack Kennedy said he wanted it to do. It made the world real again. It was exactly the kind of small dinner party that marked a hundred nights of every year for me, even to the talk about the weather (hurricane on its way, rain expected to get worse) and Lavi's daughter's school grades, and how truly beautifully (Jackie told me again) I had played the Gershwin, and what a pity it was that the audience had been distracted.

The Ambassador took me in, handsome blocky Russian face cheerful and admiring of my dress, the flowers on the table, the wine, the food. I'd always liked Lavrenti, partly because he really enjoyed music. It wasn't always the kind of music I understood. I'd gone once with him to hear some traveling troupe from Soviet Georgia, fifty squat, dark, handsome men bellowing out a-capella songs that seemed to be made up mostly of roaring, with interjections of *Hai!* and *Hey!* every few seconds. They were not my cup of tea, but Lavi's eyes were misting when we left; and I'd seen him affected just as much from the stage, while I was doing the Prokofiev Second. Which says something; because there's marvelous musicianship in that concerto, but the fraction of any audience that finds it touching its heart is minute.

And for nearly an hour we stayed off the subject of the other United States of

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America's invasion, and especially the subject of my Dom.

Jackie kept it going. She and Mrs. Hart were helping with a fund-raiser for Constitution Hall, and the two of them had amusing stories about how Pat Nixon wanted to bring in a country-and-Western group and Mrs. Helms had a pet tenor from Southern Methodist University she wanted to give exposure to. As we were starting on the guinea hen and wild rice Jackie looked over at me and said, "Shall we really rock them, Nyla? Would you like to come and do something like the Berg?"

The Senator shifted position uncomfortably—his back was obviously bothering him again—and complained, "The Berg? That's that squeaky-squawky one, isn't it? Do you really like that, Nyla?"

Well, nobody really "likes" the Berg concerto—I mean, it's like "liking" a rogue elephant. You have to pay attention to it, whether you like it or not. But it's a show-off piece, so I need to do it once in a while to keep the other guys impressed. and I can't do it very well at home, because Chicago's Orchestra Hall isn't up to it. It's fine for, say, the Beethoven or one of the Bruchs, which are so melodic and rhythmic that the orchestra doesn't really have to hear itself. But they need to for something like the Berg, and Orchestra Hall's acoustics aren't good that way.

While I was explaining all this to Jack Kennedy, I could see that I didn't have his attention. His eyes were on me, but they were looking right through me, and he was stirring the wild rice around with his fork instead of eating. I assumed it was his back. So did Lavi. "Ah, Senator," he cut in, with that Russian-bear good humor that he used for sympathy, "why not come to Moscow to see doctors? Our Djugashvili Medical Institute, named for grandfather, not me, has best surgeons in world, no question!"

"Will they give me a new back?" Kennedy growled.

"Spinal transplant, why not? Have Dr. Azimof, best transplant man in world. Has done three hundred eighty-five hearts alone, not counting livers, testicles, I don't know what all. Have saying in Moscow, when world's first successful hemorrhoid transplant is done, Itzhak will do it!"

I laughed. Jackie laughed. Everybody around the table laughed, except the Senator. He smiled, but the smile didn't last. "Sorry, Lavi," he said. "I'm afraid my sense of huma isn't working very well tonight." He put down his fork and leaned across the table. "Gary? Did you say they were flying Jerry Brown in—I mean, *our* Jerry?"

"That's right, Senator. They located him in Maine, but his flight was delayed on account of the weather."

The Senator grimaced, rubbing his back. "Tell me about the weather," he grunted, waving to the butler to take his plate away. "God knows what use Brown will be," he commented, "but I guess he can at least give us some background on his opposite number, over there."

Hart chimed in, "I wish we had a better line on those other guys. Maybe we could find some more of their doubles here and get them in on this."

Neither of them was looking at me, but Jackie was. "Nyla," she said, "you know Dom DeSota, of course." And I figured out why I had been invited.

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Without ever saying an overt word, Jackie was giving me honorary status as a wife—anyway, a what-you-might-call fiancee. She could not have treated me better if Dom and I had been married. She might not have treated me as well if Dom and I had been married because, Dom's reputation was thoroughly beclouded—

Or maybe not, because she went on, "I think you spoke to him not long before he left for Mexico." Tactful! But Dom's chief aide must have been talking. "I wonder if he said anything about the reason?"

I hesitated. "I don't know if you all know what was going on at Sandia—"

Lavrenti said, "Oh, yes, I think so, dear Mrs. Bowquist. Even I had heard something."

"You can speak freely," said the Senator. "If it ever was a secret, it isn't now."

"Well—the Senator said something about a double of himself. Exact. I mean, even with the same fingerprints. They wanted him to confront this other man."

"Exactly," said Gary Hart triumphantly. "It's just what we thought, Senator. That man on television wasn't our own Dom DeSota at all."

The Senator nodded. Then he gestured to the butler. "We'll take our coffee in my study, Albert," he said, and then to us, "Let's take another look at this guy on TV."

Even so, it took me a long time to understand what they were saying. We were in the study—not what I would have called a study; it was bigger than my own living room in Chicago, big enough for war councils and off-the-record meetings of a dozen or more. It had four television monitors plus the big screen; it had news-wire CRTs for INS and AP; most of all, it had a videotape machine. Jack Kennedy sat in the corner of the room nearest the air-conditioning exhaust with his cigar, gnawing on his knuckle as he watched the replay of Dom's face, speaking in Dom's voice the words that I could not believe Dom would ever say.

And neither could Jack Kennedy. "What do you think?" he asked the room at large. No one spoke, and I realized the Harts were looking at me.

For a moment I wondered if, after all, they were blaming me for Dom's incredible turnabout. The guilty conscience again, of course.

Then I had a second thought.

"Run it again, will you?" I asked, my voice beginning to shake, as I fumbled in my bag for the glasses that I never wore in public. I looked harder at my love's face, studying every line, listening to every tone, watching every gesture.

I said doubtfully, "He looks very thin, doesn't he? As though he were under some kind of strain—or else—"

"Or else," said Hart, "we were right about that, too, Senator. That isn't our Dom DeSota. It's theirs."

"I knew it," piped Jackie, who had moved over to the arm of my chair. I felt her hand on my shoulder, mothering me. I could have kissed her. A constriction I hadn't known was there fell away from my chest. Oh, Dom! You might be an adulterer, but at least you weren't a traitor! . . .

"I think," announced the Senator,

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"that we might just take a look at that CIA summary now, Gary." He took a folded sheaf of paper from his aide, put his own glasses on, and glanced at the top page.

I wasn't listening. I was too filled with relief. It didn't make everything all right, quite. There was still Ferdie. Not to mention Marilyn DeSota. But at least one sharp, shocking pain had eased.

I wondered what time it was. If I could excuse myself soon and get back to my hotel—if I could call Ferdie still tonight, before he went to sleep—maybe now I could go through with it and tell him what I was so frightened to say. Of course, there was still Marilyn—

Of course there was still Marilyn! What was I thinking of? How could I tell my secret without telling Dom's, too? And how could I do that without at least warning Dom first?

Dissolved again in doubt, I tried to pay attention to what Jack Kennedy was saying. "—two people," he said. "One was a smart Albuquerque cop. The other was a smart F.B.I. woman they put in shorts on a bicycle, out on the mountain where the other guys had occupied a television transmitter. Neither one had any difficulty getting the enemy soldiers to talk."

"Lousy security," frowned Hart.

"Lousy for them. Good for us," said Jack. "Anyway, they didn't say anything—at least they didn't say much—about military matters. But the cop and the F.B.I. girl did get them talking about the differences between their world and ours. I think we have a pretty good idea now of where their history and ours are different."

I tried to listen with comprehension to the rest of what Jack Kennedy was saying. It wasn't easy. What I know about is music; there weren't very many history courses when I went to Juilliard. For that matter, it was hard for me to grasp what was meant by "parallel times," though Dom had explained it to me. As a theory. As reality it was a whole lot harder to accept.

"Their enemies," Jack said, "seem to be the Soviet Union and the People's Republic of China."

He paused, glancing at the ambassador, who sank down in his chair, frowning, without comment. "Which China?" I asked, as anyone would—did they mean the Korean Mandate, or Han Peking, or the Hong Kong Suzerainty, or Manchukuo or the Taiwanese Empire or any of the other twelve or fifteen pieces China had splintered into after the Cultural Revolution?

"Just one China," said Jack, "They managed to hang together, and now—for them—they're the biggest nation on Earth."

We all looked at each other. That was hard enough to swallow. The idea of the Soviet Union threatening anybody any more was even crazier. I tried to read Lavi's expression, but he had none. He was just listening and after a moment he stretched out a hand and took one of the Senator's cigars, though I knew that normally he didn't smoke. He kept his eyes down on it, slowly unwrapping the foil, not speaking at all.

I could see why he was having as much trouble with all this as I was, although for different reasons. It was, after all, the nuclear exchange with the U.S.S.R. that had sparked the Cultural

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Revolution in China. What it had done to the Soviet Union was even worse. Moscow gone, Leningrad gone, basically the whole country decapitated.

I tried to remember Russian history. There'd been the Czars. Then Lenin, who got assassinated or something. Then Trotsky, who got them into a series of border wars with places like Finland and Esthonia, most of which he lost. Then Lavrenti's own grandfather for a while, with all kinds of internal famines and insurrections—who started the nuclear project, which got us into the atom-bomb race, which only ended when the Chinese zapped Moscow and the nuclear project, all at once. . . .

But in their time, it seemed, Trotsky never did take over the U.S.S.R., though Lavrenti's grandfather did. There wasn't a series of border wars. There was one big one. They called it "World War II," and it was with a man named Hitler, a German, out to conquer the world, and very nearly making it before the rest of the world united against him.

That was a stunner. Germany was just one country! I'd played there! It wasn't anywhere nearly big enough to threaten the whole world!

And besides—there was Lavrenti, sitting across the room from me, slowly igniting his Cuban Claro. Of course, he was nominally a Communist. But the Russians were nowhere nearly as militant as, say, the English Bolsheviks, with their centers of aggression in all their so-called "commonwealth" federated republics. Thank heaven Canada and Australia had split off. . . . I shook my head. It didn't make much sense to me.

It did, unfortunately, to Lavrenti Djugashvili. He had smoked the first half-inch of his cigar by the time Kennedy finished with the CIA report, and expected it when the Senator stopped and looked inquiringly directly at him. "I take your point," said Lavi. "This is a matter of concern. If this invasion of your country is in the final analysis directed at mine—"

"Not at yours exactly, I think," Jack said quickly. "At the Soviet Union that exists in their time, I would suppose."

"Whose people," Lavi said heavily, "are still my own, are they not?"

Kennedy didn't say anything. He only gave a fraction of a nod.

Lavi stood up. "With your permission, dear Mrs. Kennedy," he said somberly, "I think I must visit my Embassy now. I thank you for this information, Senator. Perhaps something should be done, although I do not now see just what."

We all stood up, even us women. It wasn't a mark of respect so much as a sort of declaration of sympathy. When he was gone, Senator Kennedy rang for the butler to serve us nightcaps. "Poor Lavrenti," he said. And then, "Poor us too, for that matter, because I don't see just what to do, either."

Bad back or not, the Senator decided to drive me back to my hotel himself. Jackie came along for the ride. It wasn't a pleasure jaunt. The rain was coming in sheets and the streets were slippery with emulsified oil.

All three of us fit easily in the big front seat. We didn't talk much, not even Jackie, who was helping her husband scan the road nervously—since both his younger brothers had died in

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car accidents, one drowned, one burned, she was uneasy about cars. I had my own thoughts. It was not much past ten o'clock. Nine in Chicago. Ferdie would surely still be awake. Should I call him? Did I have the right to, for Dom's sake? Did I have the right not to, for Ferdie's sake?

So I hardly noticed when we slowed down with an unexpected traffic jam ahead of us, until the Senator leaned forward irritably. "What the hell?" he muttered, trying to peer past the cars stalled right in front of us.

"What is it?" asked Jackie. "An accident?"

It was no accident.

Kennedy swore. Through the windows of the car ahead I saw something coming toward us in the other lane. It was fast and big, but it had no flashing lights of police car or ambulance. It had no proper lights at all, just a single bright spotlight that flick-flicked back and forth across the road, like the blade of a windshield wiper, and the light illuminated something that stuck out of the vehicle itself.

It looked almost like a cannon.

"My Jesus God Almatty," breathed the Senator, "it's a fucking *tank*."

Jackie cried out—so did I, I'm sure. The Senator didn't wait. He backed the big Chrysler around in a quarter-circle high-speed turn, banging the muffler against the curb on the far side of the street, cramped the wheel as far as it would go, and floored it. He skidded out onto the highway maybe thirty yards ahead of the tank, accelerating all the way up to ninety miles an hour on that meandering river road, and I kept seeing that huge cannon sticking out in front of the tank. Aiming now straight at us. The Senator felt it, too, because at the first cross street he stood on the brake. We fishtailed to a stop—almost a stop—oh, say, about forty miles an hour—and he manhandled that car around the corner.

A taxi was coming the other way.

I have never felt closer to death. We stopped. So did the other car, but not with anything to spare. Our front bumper was almost touching the taxi driver's door, and the man inside was already rolling his window down to sob and scream at Jack.

Who paid him no attention.

We had stalled the engine. Jack didn't even try to start it again. He opened his door and leaned out, grunting at the twisting he was giving his back, to stare as the tank went past, fast and serious, followed by half a dozen troop-carrying trucks. I could see the gleam of helmets in the street lights as they passed, and behind them was another tank.

"Remakkable," breathed Jack Kennedy.

"Why are we putting tanks like that on the street?" I demanded. He turned to look at me. Jack is an elderly man, but I had never seen him look quite that old before. He put one arm around Jackie protectively.

"We an't," he said. "Those are not ours. We don't have any tanks that look like that." ■

CONTINUED IN NEXT ISSUE

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the reference library

By Tom Easton

Eon, Greg Bear, Bluejay, $16.95, 512 pp.
Masters of Glass, M. Coleman Easton, Popular Library (Warner), $2.95, 256 pp.
The Long Forgetting, Edward A. Byers, Baen, $2.95, 288 pp.
Red Flame Burning, Ward Hawkins, Ballantine/Del Rey, $2.95, 288 pp.
The Temple of Truth, E. C. Tubb, DAW, $2.95, 222 pp.
The Black Ship, Christopher Rowley, Ballantine/Del Rey, $2.95, 320 pp.
Procyon's Promise, Michael McCollum, Ballantine/Del Rey, $2.95, 288 pp.
A Stainless Steel Rat Is Born, Harry Harrison, Bantam, $2.95, 224 pp.
Null-A Three, A.E. Van Vogt, DAW, $3.50, 254 pp.
Probe, Carole Nelson Douglas, TOR, $6.95, 383 pp.
Dealing in Futures, Joe Haldeman, Viking, $16.95, ? pp.
Adventures in Microland, Jerry Pournelle, Baen Books, $9.95, 407 pp.

We have grown used to Greg Bear's tour-de-force virtuosity. Therefore, we greet with disappointment a book that might win wild acclaim if it had on it the name of a relative unknown. The book is **Eon,** and while it contains at least two of the most grandiose schemes in all of SF's history, and while Bear develops one of those schemes in admirable detail, his characters are largely thin and his plot predictable.

Eon begins at the turn of the millennium, when a strange spaceship approaches Earth. Investigation shows it to be an empty, hollowed-out asteroid, an apparent duplicate of Vesta. Within its vast volume are seven chambers. One contains a city not too unlike Earth's own. One contains a highly futuristic city. Another is forest, another desert, another strip mines. The sixth is filled with incomprehensible machinery that, among other things, controls inertia. The seventh—well, that is the strangest of all, for though the asteroid is only a

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few hundred kilometers long, this chamber has no end. It stretches on and on, an endless tunnel into spacetime, threaded on a linear discontinuity.

Nearly as strange are the asteroid's computerized libraries. They contain books written in human languages, dated a century and more into the future. And they tell of the Thistledown's creation, after a holocaust in the early 21st century of another Earth. History matches up to the present date, but thereafter comes Hell, the slow emergence therefrom, and the rivalries of anti-progress Naderites and technophilic Geshels. Centuries later came the creation of the seventh chamber and the exodus of Thistledown humanity down the pipe. Do the libraries record *this* Earth's future? Only time will tell, but there is already difference, for the alternate world was not visited by a Thistledown.

The U.S. and its allies have charge of the investigation. The Soviets, humbled after the Little Death of some years earlier, are jealously plotting a takeover. The U.S. brings to the Thistledown the hypergenius Patricia Luisa Vasquez, whose mathematical ideas seem to hold the only hope of understanding the sixth and seventh chambers. She makes immediate headway, but then comes the Soviet attack and, after all, Armageddon on Earth. Patricia is kidnapped by a representative of the humans in Axis City a million miles down the pipe. Her friends follow.

There is revelation of marvels galore: The pipe is infinite, stretching spaghetti-like throughout spacetime, touching every world and star. Gates can be opened at will, to allow commerce and exploitation. The Axis City, strung on the discontinuity, can travel at will along the pipe, as can the "tube-rider" ship devised by Analogian engineers. There is a war with monsters two billion miles down the line which will be ended only when, as the monsters open a gate to let in the ravening plasma of a sun, the Axis City is accelerated to relativistic velocities in order to generate a shockwave that will seal all gates and balloon the pipe to vaster width. And there is hope for Patricia to find a gate that will open on an Earth where she has died but her true love and her parents still await, where Armageddon does not loom, where she can reclaim all she has lost.

There is much here to reward the reader, but not, I think, enough. I missed the sense of involvement I expect to get from Bear's work, perhaps because he chose to spend more time telling us about the marvels he had imagined than on the people and their reactions to them. Too much of the conflict involving the Axis City residents is offstage, as is the war (we never see one of the monsters; we never even get a description of them). On the other hand, if Bear had chosen to build up his story along such lines, he would have had to make it a trilogy, and I—and others—have bitched about the proliferation of those things quite enough. Take the book as it is. You *will* enjoy it. You just won't enjoy it as much as you would like to.

M. Coleman Easton writes that he is not one of my long-lost cousins. I answer, "Who knows?" for my forebears were pretty prolific folks, and some of those cousins, six and eight times removed, are very long lost indeed. But that is all very much beside the point, for I have before me his **Masters of Glass,** a fantasy novel with something of an SF feel. It centers on a world rather like a long-gone Earth, where people live in peasant villages, aided by mages whose skill is the casting of glass beads

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that duplicate the eyes of the animals they hunt and trap, or of the beasts that hunt men. These beads give their bearers power over animals; misused, they can also give power over people.

The Vigen Watnojat is our hero. He lives in a time of fading magic. People have learned to rely on more materialistic forces as the worst of the beasts, the dreaded Lame Ones, have died out. Yet the Lame Ones return, and the protection of the beads is once more necessary. However, the essential pigment mineral has long since been exhausted. His apprentice dead, Watnojat must take a young niece, Kyala, as apprentice, and set out to seek the pigment from a wizard who has abused his art, using it to enslave people.

The tale is one of quest and struggle and victory, of intellectual honesty and of magic as a technology as subject to resource shortages as any other. It avoids some of the clichés of the genre, and it manages to satisfy a little better than many others of the type.

Do you recall Ed Byers's *Analog* stories of Crown Mountain: ex-tactician and world-killer Pan Kirst, whose obsession is the stargate atop the mountain; and Titus Wilde (a.k.a. Setsen Dai, "The Shining Light"), who alone is so pure of heart that he can pass the personality censors the alien builders installed in their gate to keep the wolves from their homes? In **The Long Forgetting,** Byers tells us what happened after humans learned how to bypass those censors, tore down and duplicated the gate, and built a civilization that spanned galaxies. The aliens did something about it—they set a wave of mysterious force sweeping across space; as it passed, humans lost their intelligence and fell to an outward savagery to suit their psyches.

Yet Byers does not give us what might be the most interesting story. He passes over the Fugue, its effect on people, the struggle to fight or escape it, the inevitable adaptations to it, and the recovery in far too few pages. The aliens remain elusively off-stage. Most of his story happens centuries after the 840-year Dark Age, when civilization has rebuilt quite completely and a religion has grown up with a god called Setsen Dai and a Devil called Kirst. The Church rules, it brooks not heresy, and it acts when an archeologist comes into possession of documents that point to the original humanity of both God and Devil. Hero Brennan goes undercover to prove the authenticity of the documents by tracking down the world of Crown Mountain and seeking supporting evidence. He finds it, in the form of badly decayed "tapedexes" containing the *Analog* stories, and he confronts the Church with truth.

Byers's main characters, the anthropologist and the priest who tracks him, are well developed and interesting. Others, such as the villain who gives Brennan the documents in hope of collapsing the system, the villain's sister, and more, are developed just enough to carry their spears; many verge on stereotypes. Yet the idea is intriguing, and the events that develop it are absorbing enough. The tale is a good read, and I expect you will enjoy it.

Ward Hawkins is a long-time writer, first for the slicks, then for movies and TV, with credits for *Rawhide*, *Bonanza*, *Little House on the Prairie*, and *Voyage to the Bottom of the Sea*, among others. Now he "writes only what he enjoys most," and that means such entertaining SF as **Red Flame Burning.** Here we meet retired engineer Harry Borg, busily drinking himself into the grave when

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a door opens into his apartment from a parallel Earth where the dinosaurs survived and evolved into the intelligent Jassans. They kidnap him, take away his taste for booze, and rejuvenate his body until he looks like a true hero, as he never did before. They also kidnap a few neighbors, including several young football players, a young woman, and her daughter, Tippi, the book's most memorable character.

As Harry finds true love with Tippi's mother, the Jassans tell him what they want with him. They are an old species now declining in aggressiveness, except for the priests of peace. Their technological marvels were all developed centuries ago, and few know how to repair them. And there is a war with a green-skinned race of the Jassan species. Will Harry take the medallion of the Red Flame, form an elite corps of soldiers centered on the football players, and win the war? If he can do it, the Jassans will send them all home. If not, well, the reptilian Jassans have these meat animals, the bassoes, that look a lot like furry humans, and Harry and his friends will make a very nice fricassee.

Naturally, Harry does the job. He learns something horrifying about the Jassans' yellow mind-control ray and the bassoes, comes up with a relatively nonviolent way to win the war, and makes it home. He doesn't get to take the Jassan rejuvenation technique with him, but he does get to keep his love. The result might fit the big or little screen very well. It's nothing weighty, but it is good, clean, adventurous fun.

In E. C. Tubb's **The Temple of Truth,** the thirty-first installment of the saga of Dumarest of Terra, Earl Dumarest finally—apparently—comes up with the coordinates of his long-lost home world. Seeking an antiquarian who might have clues, he is framed for murder on the ice world of Erkalt and must win free by playing quarry in a vicious hunt. He succeeds (of course) and wins the aid of a mysterious woman, who leads him to the planet Driest and Rauch Ishikari, who wishes to raid the Temple of Cerevox, which may hold what Dumarest seeks. And the Cyclan, as always, is hot on Dumarest's trail.

There is blood, pain, action, and disaster aplenty. More interesting is the shift in emphasis, for it is seeming more and more that Earth is not simply lost, but proscribed, deliberately erased from all records. Why? The answer, Tubb says here, may be the horror of its past shame, nuclear war, but I suspect he may be holding a rather different card up his sleeve. We may get to see that card soon—say, in another six books—for Dumarest seems very near the end of his quest.

I have several sequels this month. The next is Christopher Rowley's **The Black Ship,** which follows his *The War for Eternity*. I reviewed the latter favorably awhile ago; happily, I can say that while *Ship* is neither so original nor so thrilling, it is a good, enjoyable yarn.

Ship takes place on Fenrille, world of great forests protected by the hyper-advanced aliens, the Arizel, centuries after Fenrille's men and fein have, with Arizel help, fought off an attempted take-over by Earthlings hungry for the immortality drugs only they can produce. Now comes a horde of refugees in a super-ship from Neptune, as intent as their predecessors on loot, aided by catspaw rebels. They wreak havoc and are defeated in the end only by the flaws in their own people, aided by a young man who has been gifted with unusual powers by the Chitin, insectoid producers of immortality, and the Arizel he has

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rescued from a threat of disaster to our entire universe.

The story's main drawback lies with Rowley's limited understanding of biology, which shows when he says that DNA is a triple helix and a reproductive control protein. It shows less dramatically in the nature of the Chitin intelligence—a hive species that remembers and thinks by synthesizing and analyzing complex proteins. Rowley notes that the process has to be slow, but I doubt it could be fast enough to be useful. Nevertheless, *The Black Ship* is worth reading. It's fun, the scope is impressive, and the plot is nicely dependent on a number of coincidences that Rowley makes us believe are inevitable. The result is a well integrated space opera of the very finest kind.

Michael McCollum's **Procyon's Promise** follows up his *Life Probe*, which I reviewed in December 1983. That one brought a slower-than-light starship to the Solar System, bearing the accumulated knowledge of numerous species in exchange for humanity's in hopes that the ship's owners, the Makers, would eventually be able to find a faster-than-light drive. As the probe shed its velocity, it detected an FTL ship's wake near Procyon, and though it didn't think humanity a very likely species, it had to stop to refit for its next leg. Unfortunately, human nationalists destroyed the probe except for a computer sub-intelligence. The deal went through, and the mission had to be carried out by humans.

Now, centuries later, the mission never heard from, the Solar System is thoroughly built up. Everyone is grateful for the technologies the probe had brought. And an FTL wake is spotted coming *here*. First contact falls to Chryse Haller, daughter of one of Earth's richest industrialists, on a jaunt to visit the old probe's wreckage. The starship picks her up, and lo and behold! It contains the descendants of the humans who had left for Procyon so long before.

The rest of the book is unfortunately anticlimactic. We learn that the human explorers had found Procyon an abandoned base but managed to create an FTL ship of their own using information retrieved from the aliens' dump. We follow the maneuverings that result in a new mission, using the FTL technology to track the Makers down. And we come in time to a conclusion McCollum apparently meant to be a startling revelation. The conclusion is not all that suprising, however. Worse yet, the characters are thin and the plot is a weak excuse for wrapping up all the loose ends left over from *Life Probe*. The book fails to absorb or involve enough to stand as an independent novel.

For years, Harry Harrison's James Bolivar diGriz, the Stainless Steel Rat himself, has been amusing SF readers with his light-hearted approach to crime. Now, in **A Stainless Steel Rat Is Born,** we learn just how diGriz became the Rat. A misfit youth, brighter and more rebellious than his peers, turns from petty crime to bank robbery just to get into jail, meet some real criminals, and gain a postgraduate education in his chosen metier. Disillusioned, he escapes his prison, plots to meet his world's sole supercriminal, and gains a mentor and a title. The action is constant, improbable wish-fulfillment, and the result is a very good evening's light entertainment. Enjoy it.

A.E. Van Vogt's **Null-A Three** is a dog. Tissue-thin characters are a minor problem. Somewhat worse is Van Vogt's treatment of science and technology,

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which owes far more to mysticism than to reason. Worse yet is the way the man plots his way from point A to point B by producing a flurry of activity around point A, another flurry somewhere in the middle, and finally proclaiming, "Voila! Here's B!" His great strength, as always, is his concepts and the sense of wonder they inspire.

The wonder is there, but it lacks all the support that a story needs to let us suspend our disbelief. Gilbert Gosseyn and his extra brain awaken in a third, damaged body while the second still lives. Number 2 has just tried to leap to another galaxy in search of the human species' home, but instead has brought warring forces here. Now Numbers 2 and 3 must somehow reconcile the conflict, fend off assassins, and win the universe for the good guys. They succeed, of course. Unfortunately, the story is no more than a padded novelette. Van Vogt's aggrandizement to the trivial in thought and action adds so much useless noise that the book is virtually unreadable. Fortunately, all that noise means you won't notice the various inconsistencies.

Avoid it. It might be catching.

Carole Nelson Douglas's **Probe** is almost as bad, if for different reasons. It is insistently and tritely cute, full of clichés and catch-phrases, overwritten, and predictable. It also owes a lot to Van Scyoc's *Darkchild* trilogy.

Jane Doe is an amnesia victim found in a Minnesota town, where she uses some strange power to blast the policemen she believes threaten her. Turned over to Probe, a mysterious, government-funded psychiatric unit, she promptly fascinates young Dr. Kevin Blake, thanks to the resonance of her anorexic appearance with that of his late fiancée. With hypnosis, detective work, and serendipity, he discovers that she is the clone of the lost child of a couple who had once claimed a close encounter of the third kind, being used by aliens as an information-gathering probe of Earth's culture. Douglas's imagination throws up some nice touches, but they are not enough to make her novel of more than passing interest, except perhaps to UFO freaks.

Joe Haldeman is a journeyman writer who consistently produces entertaining, deft stories. He is occasionally thoughtful. But to my mind, he has not yet produced anything as exciting as, say, Brin's or Preuss's best work. Still, his latest collection, **Dealing in Futures,** tells us a good deal about how SF stories come to be written. The ideas are everywhere; the writer's job is to pick one, and then to develop it as rigorously as possible. The results include the eleven stories and three poems in this book. Most quite enjoyable, they range from the novella "Seasons" (in *The Enemy Stars)* through "A !Tangled Web" to "You Can Never Go Back," the missing middle of *The Forever War*. A few are strictly minor stuff. The poems fail to appeal to me, though "Saul's Death" is an ambitious attempt at a difficult form, the sestina.

As every writer says, word processors are marvelously addictive. I'm finding mine delightful—it saves me a day every month, just on this column, and right now it's letting me write when my old manual typewriter would make it impossible. You see, I nicked the tip of my right index finger the other day, when I was sharpening my chain saw, and these nice, soft electronic keys are much kinder to my tender tissues.

This seems to be the only advantage of computers Jerry Pournelle doesn't

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mention in his *Byte* and *Popular Computing* columns, collected first in his *User's Guide to Small Computers* and now in his **Adventures in Microland.** Concepts and practices, hacking and writing, PCs and Zorros, absurd documentation and piratical license agreements, all in Jerry's often vituperative style, it's all there, something for everyone who uses or is interested in computers.

I only wish he would say a few words about my machine.

Speaking of machines, you've all seen the ads in these pages for microfiche back issues of *Astounding/Analog*, plus the microfiche reader with which to peruse them. Well, so did I, and I went fiche-ing (sorry!). I wrote to Micro Information Concepts (P.O. Box 2163, Dallas, TX 75221; 1-800-468-0122) and asked if they had thought of showing their wares, perhaps on loan, to book reviewers. Got a bite, too—practically by return mail, three decades of back issues landed on my doorstep, along with some information about the company's product line and a note saying a "475" reader was on the way (on loan, of course—the whole package costed out to $630).

So what can I say? The back issues are back issues, the pages of each spread out on one of those little cards (fiches) of film you stick in a reader. The print is clear, and the fiches that present the covers, in color and a decade at a time, offer a lovely way to overview one's misspent youth. The 120 fiches of ten years' issues fit neatly in a smokey plastic box and take up a *lot* less room on the shelf than the paper magazines. Happily, the microfilm versions are not as cold and inhumane as one might think; they were prepared from someone's well weathered collection, not the brand new issues that an outfit like University Microfilms records as they come out. This will probably change as Micro catches up with the present, as it plans to do for *Analog* and other SF magazines.

The reader looks a lot like the ones you find in a library, built simply and ruggedly and quickly convertible to project on a wall. If you don't like the "475," you can order the more compact "Fichette," which comes with a tripod for use in bed. There is also the handheld "FR-15," designed for use in the field by the survivalists and backpackers who were the company's first markets. Micro publishes some 2000 books, mostly for these people, and 40,000 Geodetic Survey topographical maps (unfortunately, the maps they sent me as samples were not at all as satisfying as the *Analog* back issues; some were muddy, and others were faint); they have experimented with nautical charts as well.

What else do they offer? There's the Ashley index to *Analog*, now sadly behind the times. There are also ten books by James Gunn, with plans to publish his complete works, and I'm told that Micro wants to do the same for as many SF writers as it can, even including proposals, drafts, and ultimate evolutions. They also want to expand their coverage to *Weird Tales*, *Unknown*, and *Isaac Asimov's Science Fiction Magazine*. They have their eye on the library market, and I suspect they will do very well indeed there. They should also be able to appeal to those handicapped who have trouble handling paper magazines and books and to completist collectors who are running out of room.

The niftiest thing is that here is a bit of old-hat SF technology that is finally filtering down to the consumer, and the prices don't seem unreasonable. The

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Gunn books are $2.00 apiece, a year of *Analog* $16.00, a decade $140.00, the index $20.00, the "475" or "Fichette" $140.00, the "FR-15" $29.95, a color covers fiche $25.00.

Now, how long will it be before we can buy a book on a tiny cartridge that we plug into a book-size computer that opens up, like a book, to show a screen where the left-hand page would be and a keyboard on the right? ■

●Our March cover story, J. Brian Clarke's "Joint Action," is just what the title implies—on several levels. You may remember the Phuili, the alien race with whom humans shared a world covered with artifacts equally alien to both species—artifacts which eventually proved to be literal doorways to a vast multitude of new worlds. Now they still share the gate world, uneasily—and a big problem. It seems both species face a common threat of the highest order, but it will take their cooperation either to diagnose it or to treat it. No small order, especially when mutual suspicions are already splitting both humans and Phuili into factions, and the larger threat requires a conteraction which none of them is willing to take alone. . . .

Our March issue will also contain Part III of Frederik Pohl's *The Coming of the Quantum Cats*, and a fact article by John Gribbin called "Before the Big Bang." The juxtaposition is pure coincidence, but some of Gribbin's facts suggest that some of Pohl's fancies may not be quite as fanciful as they seem. **IN TIMES TO COME**

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brass tacks

Dear Stan,

Please thank Jay Kay Klein for his Biolog on me. Condensing someone's life onto a page is tough, and he did a good job. If I may, I would like to offer two very minor corrections: the currently accepted anglicized spelling of my Chinese name in Mandarin is "Wu Jiaqiu." Also, I actually sold "By the Flicker of the One-Eyed Flame" in 1975, though it was published in 1977, as the Biolog read. Really, though, I appreciate the column; thanks to all concerned.

WILLIAM F. WU

Dear Stan:

On your June Editorial ("The Need to Believe") . . .

I don't fault you for running either of the articles that drew the flak, but I would quibble about one thing. I think you were somewhat remiss to run that psychic's pedigree without comment. The article, like any story or article, represented the view of the author. However, in order to evaluate that view, we need either reliable information on who's speaking, or we need to know that the author description is self-description.

You and I both know that biographical blurbs in almost all magazines are written by the authors or from material supplied by the authors, but most readers don't. They tend to assume that it's the magazine speaking about the author.

Since magazines generally don't have the resources to investigate their authors' backgrounds, a good way to handle the situation is to have the note in the first person and preface it with "Author X writes . . ." That tips everyone off as to the source of the information.

The second point has to do with the rather intemperate reader response you

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got to the pieces. One of the things you run into in this business is that a great many people have hot buttons hard-wired into their psycho-circuitry. The next thing you learn is that those hot buttons act more like proximity switches. The other thing you learn is that in addition to delivering a huge emotional charge, those buttons short out the analytical functions.

In other words, if you write something that is just close to a sensitive subject, people will jump all over you no matter what you actually said. They don't really listen or read, they just hear something that sounds somewhat as if it bears on one of their bugbears and BOOM! As you discovered in the wake of the psi articles this response is in no way mitigated by the native intelligence or level of technical training of the subject.

This has several unfortunate results. One of them is that there is a whole range of scientific problems you cannot research in our culture—and other ranges in other cultures. Renaissance Italians came unglued when Galileo suggested heliocentrism. We drag out the picket signs when someone does a study which suggests blacks are intellectually inferior to whites. (Want to bet you don't get at least one letter about that last example?)

My current favorite example is the brouhaha over a proposed government study of phobic factors in some peoples' reaction to nuclear power. I don't think it takes any great power of observation to realize that some of the reaction to nuclear power is phobic—an unreasoning fear not based on facts. However, the suggestion that we study the phenomenon was greeted by a storm of protest that reached as far as an opinion piece on the editorial pages of the *Wall Street Journal*. The general tenor was that this was a heinous government plot to dismiss all critics of nuclear power as crazy.

Now, neither the government nor the academic who proposed the study ever claimed that the anti-nuclear people were all crazy or that there are not serious concerns about nuclear safety and economics. Nor, to my knowledge, is anyone claiming that the phobic element in the anti-nuclear movement is unique. To take another example, it is a component of the campaign against "secular humanism." But the people who are so fiercely critical of the nucleophobia study see it as an attack on everyone opposed to nuclear power.

I'm not sure what we can do about this except recognize it and learn to live with it. We do need to understand, however, that this process introduces a certain level of background noise into discussions on some issues, and to conduct ourselves accordingly.

For myself, I'm a lot more skeptical of astrometeorology, self-proclaimed seers and such than I once was. But if someone has something significant to say, I'd like to hear it.

RICK COOK

Dear Stan,

I salute you familiarly, as an addict greets his "man"—Stan the Man; those circles brook little formality—as a reader of *ASF* since the still-vivid discovery of this undreamed-of phenomenon on a magazine rack in a small-town drugstore at the age of ten, manifesting as the August 1945 issue. While less so than the gold-and-jewels mine of the town's Carnegie Library, that rack was familiar territory, hunted through with care every time the family boat *Helen II* made port in Anacortes to sell her load of fish and my sister and I got "shore leave"; the druggist had just begun carrying science

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fiction pulps. Oh, I'd dug out Haggard and Burroughs and Wells, delving in that old Pict Carnegie's hoard, but this was Something Else Again . . . and it comprised over the succeeding years, I think, one of the most valuable elements of my education. So I feel I know you, as I feel I knew John Campbell —who was in a very real sense, though at long remove, a mentor to me—and I think he'd've liked the way you've conned his bonny barque during your trick at the helm. And I'm still an addict, and her hold still hauls the pure quill; *most* every trip.

What moves me to write is your editorial in the June issue, and my reflections on the approbation with which John would surely have read it. We need that; this society, this culture at large, need somebody here and there reiterating the goddamn basics in plain intelligible English for the sake—at least—of the kids. The adults are probably beyond hope, short of some elaborate psychotherapeutic procedure based on yet-obscure principles; but there are still kids, I'm sure, who go down to that wharf each month to check for a sail on the horizon, and the schools teach what they need to learn—"how to *think*" is one way of specifying it—less today than even they did when I was young. That's a fair evaluation, I believe, always assuming that what I gather from my daughters, nieces, nephews, friends' children is representative, and that the permillennial trap of presuming the current generation to be going to the dogs because one's perspective has—inevitably—shifted has been cautiously enough avoided. And it's a disturbing trend.

Old John was a Verulamian, and a credit to his faith. My granddad used to tell the old folk-history tales all insufficiently reconstructed Celts seem prone to, and he had little praise for Campbells; but in his own way he hewed as closely to that same ultimately pragmatic credo, in some naïve aboriginal form. It isn't too well appreciated that our whole business of modern science is at root an epistemological, and hence essentially metaphysical, matter; and that one not only can but *should* distinguish clearly between the metathesis which sets the ground rules for the project that business comprises and the complex body of theses and hypotheses which constitutes the results-to-date of that project. Humans have a native thirst for a well-elaborated, self-consistent world-view; it comes of lacking fangs and claws, and having to get by in too many diverse econiches for hard-wired programming to work. They've used a variety of procedures for satisfying that thirst: asking the Elders; finding an Authority and appealing to him; seeking a revelation from a spirit or deity; consulting a compendium of such revelations (the older the better, generally), authoritatively interpreted; carefully drawing long chains of deductive inference from a few self-evidently true axioms; and so on—but they tend to be quite uncomfortable so long as it remains unslaked, so long as their existing world-view contains some large and unignorable gaping empty hole.

There is no mystery about it: those large, gaping holes are *uncomfortable*. The normal person wants them *filled in*, promptly. Very small children almost never like olives, either. An appreciation of them is an acquired taste and must be cultivated, and where gaping holes are concerned some modicum of explicit instruction and drill and discipline may be needed; the occasional freak (statistically speaking) may intuit the rewards and impose the discipline on him/herself, learn to love the allure

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of the unmapped regions of reality, even, and look for holes where others see no flaw in seamless certainty; but you cannot realistically expect *that* of a majority without a little overt, institutionalized, and perhaps protracted kindly help. I got some of that help from John Campbell; and I've tried to pass it on a little here and there. Thanks for taking a pull on the old oar yourself.

JAMES F. MACLEAN

Port Angeles, WA

I'm sorry we didn't have room to print your whole letter, but I hope the part we did print gets the essentials across to your satisfaction. And thanks for writing!

Dear Mr. Schmidt:

In "What Was the Name Again?" Mr. Nicholson implies that schizophrenia is synonymous with multiple personalities. That is not the case. Schizophrenia is a disease involving an altered perception of reality, often with delusions and hallucinations. Multiple personalities involves a split in consciousness such that the individual develops two personalities who may be unaware of each other. I hope that this will help to clear up any confusion which the story may have caused.

KATHRYN GOLDIN, M.D.

Orange, CA

Dear Sirs:

I would like to comment on Michael Owens's letter, and Ben Bova's reply, in the July "Brass Tacks." Mr. Bova says that "Star Wars" can "make all forms of aggressive warfare so difficult that an era of worldwide peace is in view—*if the nations of the world want peace*." I added the emphasis because I think Mr. Bova didn't realize that he had agreed, in different words, with one of Mr. Owens's major points: "The nuclear arms race and the potential destruction of human society is not a technical problem but a social and political one." Surely people's wants are a matter of politics.

On the lighter side, I think I understand the presence of the DDT in the computer which so baffled G. Harry Stine ("The Computer Mystique," May's Alternate View article). Although it is true, as Mr. Stine says, that the Environmental Protection Agency (EPA) has banned DDT, many computers and computer components are assembled in countries where there is no EPA. And we all know that DDT is great for debugging.

THOMAS LEE BOLES

Long Beach, CA

Dear Stan,

On page 124 of the July, 1985 issue of *Analog*, you chose to publish a statement on "enlightened selfishness" by a Joseph Wood Krutch.

I have read this statement carefully several times. It still does not make sense to me.

Quite simply, I fail to see the point.

When primitive man killed a beast and gathered roots and filled woven baskets with berries, they were exploiting resources. Some of this resource exploitation was renewable. Some was not.

Now I have no trouble with Mr. Krutch's statement, say for example, with finite resources such as oil and minerals. A highly materialistic society is using these resources at a tremendously wasteful rate.

But what is the meaning of such a statement as: "The wisest, the most enlightened, the most remotely long-seeing exploitation of resources is not enough, for the simple reason that the whole concept of exploitation is so false and lim-

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ited that in the end it will defeat itself and the earth will have been plundered no matter how scientifically and farseeing the plundering has been done."

What does this tell me? That the world should revert to the stone age? It seems hardly plausible unless we are willing to reduce our population from four-plus billion to less than a billion or half that number.

I think it is reasonable to assume that Mr. Krutch had a point and that the editor of *Analog* published it as being a valid point.

Unfortunately, it leaves me more confused than informed. What would Mr. Krutch have us do?

BRICE MEEKER

Falls Church, VA

I suspect you and Mr. Krutch understand somewhat different things by the word "exploitation," but surely you can imagine courses of action other than "everything as it is now" and "reverting to the stone age." Unfortunately Mr. Krutch is no longer around to elaborate, but his books are. That one is The Voice of the Desert. *You may not agree with everything it says, but I suspect you will find it worth thinking about—which, by the way, is the philosophy behind most of our fillers.*

Dear Stan:

On the July ASF I've got one vague suggestion to make about improving school curricula: force students to take and pass at least one course in a subject they hate, although don't ask me how to select it—psychological testing, perhaps? Incidentally, I don't believe that education itself can broaden a mind. I've met people whose minds have actually become narrower after *x* number of years in college; their studies have simply given them the materials to reinforce their prejudices. You can't broaden a mind that doesn't want broadening.

One reason we haven't met any star-faring aliens may be that the development of both technology and astronomy are more difficult than they seem. Perhaps most planets with intelligent life aren't blessed with a pronounced axial tilt, a large moon to eclipse the local sun, or an asteroid belt and meteor streams to dump rocks on the planet. Without such things, there may not be a reason for any aliens to develop an interest in extra-planetary affairs. A planet could also be so hospitable to life—or its natives so well adapted to their ecosystem—that they don't need to develop a technology to fight off cave bears, grow extra grain, pipe and store water, and so on. Geologically speaking, if there aren't any native metals lying close to the planet's surface, it may never occur to any aliens to develop metallurgy.

"George Washington Slept Here" was a fun romp, and I was happy to suspend my disbelief throughout it.

I have a few half-baked ideas about Dr. Gillett's article on the ozone rocket. The first is that there may be a way to handle ozone in a rocket: freeze it solid. Pour it into a solid rocket booster shell, with a hole down its length, and pump liquid hydrogen down the hole. Obviously, solid ozone won't slosh around, doesn't need to be pumped, and won't react with itself. The motor could be shut down by switching off the hydrogen, and it would have a higher specific impulse than an equivalent solid rocket. The plug of ozone could be handled by inserting a wooden rod into its central hole, turning it into the world's biggest popsicle . . .

If ozone can be kept from reacting with itself, what about monatomic hydrogen? Single-H has an I_{sp} of approx-

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imately 800, which makes it even more rewarding than the ozone-hydrogen combination. You'd only need one tank and pumping system—or none, if monatomic hydrogen could be frozen into a solid-fuel rocket form.

W.R. THOMPSON

Dear Dr. Schmidt,

Well!

You cannot write a column on education (July editorial) and expect to receive no reply! Education is like art: everyone has an opinion. Meet one everyone.

Yes, I agree, what a college education can extend best to students is the power to continue studies outside of the formal institution. Since our society favors verbal and math-logical thinking in its higher education, training should be biased to strengthen such thinking. To my mind, that means it should (1) give students the wherewithal to locate/isolate wanted data and (2) to read/interpret that data critically. We could talk further about developing heuristic thinking and approaches to forming useful hypotheses, but I think these 2 points are sufficient here.

And as for your specific points:

Certainly #1 is *sine qua non!*

#2, "a decent grounding in physical science," sounds good. You mention physics, chemistry and astronomy; you must assume mathematics; what of geology/oceanography/meteorology etc? Your trio would consume 1½ semesters at least, and by themselves would not give any fair hint as to the structure of my trio. And how much math? Through integral calculus? Though I do appreciate your concern for the basics and for the "hard" sciences, the time devoted so would be significant.

#3, more science, here biology, because of its importance in ecology. Yes, it is hard to imagine that one could be a good citizen without some concept of ecology.

And #4, in which you favor cultural anthropology and a non-Indo-European language. Sure, the world is small, and the West as a part of it, is very small. Cultural anthropology—actually, a good high school should ground one sufficiently in it. Except for the liberal impulse, I do not, however, see any point in learning a non-Indo-European language. Learning a European language does double duty: not only does the student learn another language (and one comparatively easy). he also, by exposure to a sister culture, can better appreciate the depth of his own. But let's consider a fun rebuttal. Brin in his Dangerous Galaxy article (see #4, pg 87) recounts the possibility that our modern society is somewhat of a freak, that the techno/scientific breakthroughs are rather unique with the West. If so, nothing could be more worth studying, understanding, than our own culture. And, if one really had an urge to study a different—a typical!—culture, one could do double duty by studying our past: the Greeks or whomever. There is no intellectual reason to go off on one of our world's interesting, exotic, dead-ends. After all, they are going Western!

So what is the minimum number of courses by your suggestions? #1—2; #2—6; #3—3; #4—6. Two years worth, without history, philosophy, literature—two years MINIMUM. Seems a bit much to me to cover formally.

COLIN WOLFE

Merrick, NY

As I tried to emphasize, my suggestions were guidelines for things I thought should be included in a comprehensive education, not *prescriptions for rigid guidelines for formal courses. I've studied quite a few of those things without*

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ever setting foot inside a classroom where they were taught, and I'm glad I didn't have to—because if I had, less of my "formal" time would have been available for subjects where that approach was really beneficial.

On non-Indo-European languages, the main value I see is in stretching people's conceptions of how thoughts can be organized and how people can live—which Indo-European languages do in only the most trivial sort of way. In my experience, hardly anybody who hasn't been there can appreciate that value—because he literally can't imagine what it involves. Which is precisely why a requirement may be a good idea. In general I don't like requirements, or forcing people to do things, but I have a slowly growing suspicion that there may be a few legitimate places for it in education—and those places are most likely to occur in precisely those areas which people are least likely to study on their own initiative. I'm a musician; my wife is not—and she very much wishes somebody had made her give it a try when she was growing up. ■

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Priscilla Garston
Circulation Director, Subscriptions

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a calendar of analog upcoming events

4-6 February
14th Annual ACM Computer Science Conference at Cincinnati, Ohio. Info: Lawrence A. Jehn, Computer Science Department, University of Dayton, Dayton OH 45469. (513) 229-3831.

7-9 February
SWAMPCON V (Baton Rouge area SF conference) at Prince Murat Inn, Baton Rouge, La. Guest of Honor —David Gerrold, Special Guest—Robert Adams, Special Fan Guest of Honor—Kerry O'Quinn, Fan Guest of Honor—Carlotta Barnes. Registration —$12.50 until 15 January 1986, $15 thereafter and at the door. Info: Swampcon V, Box 14238, Baton Rouge LA 70898-4238.

14-16 February
BOSKONE XXIII (New England area SF conference) at the Sheraton Boston, Boston, Mass. Guest of Honor—Robert Bloch, Official Artist—Bob Eggleton, Special Guest—Tom Doherty. Registration—$16 until 19 January 1986 (must be postmarked 19 January or before), $25 at the door. Presentation of the Skylark Award. Info: Boskone XXIII, NESFA, Box G, MIT Branch Station, Cambridge MA 02139.

21-23 February
WISCON 10 (Wisconsin SF conference) at Concourse Hotel, Madison Wisc. Guests of Honor—Suzette Haden Elgin and Chelsea Quinn Yarbro. Registration—$14 until 31 January 1986, $18 at the door; $6 supporting. Info: SF3, Box 1624, Madison WI 53701-1624.

21-23 February
CONTEX III (Houston area SF conference) at Hilton SW, Houston Tex. Guest of Honor—Katherine Kurtz, TM—Steve Gould, Artist Guest of Honor—Phil Foglio, Fan Guest of Honor—John Connolly. Registration—$14 until 31 January 1986, $20 at the door; $4 supporting. Info. Friends of Fandom, Box 772473, Houston TX 77215-2473.

28 February-2 March
WAMCOM 86 (media oriented conference) at Sheraton Inn Coliseum, Hampton, Va. Star Guest of Honor—Judson Scott, Guest of Honor—A. C. Crispin, Guest Author —Tracy Hickman, Guest Artist—James Oddbert, Fan Guest of Honor—Patricia Ross. Registration—$20/3 days; $15/2 days (at door only). Info: Wamcon 86, Box 2223, Poquoson VA 23662. Include S.A.S.E.

28 February-2 March
CAPRICON VI (Illinois SF conference) at Hyatt Lincolnwood, Lincolnwood, Ill. Registration—$12 postmarked by 1 February; $18 at the door. Info: Capricon VI, box 608020-8020, Chicago IL 60626-8020.

28 February-2 March
PHOENIXCON 1.0 (Atlanta SF conference) at Radison Inn, Atlanta, Ga. Guest of Honor—David Brin, MC—Sharon Webb, Special Guests—Orson Scott Card, Robert Jordon. Registration—$15 until 1 December 1985. Info: Phoenixcon 1.0 c/o Sue Phillips, 2095 Burton Plaza Lane, #A-1, Atlanta GA 30319.

28-31 March
ALBACON III (British National SF convention) at the Central Hotel, Glasgow, Scotland. Guest of Honor—Joe Haldeman. Registration—L9 until 1 March 1986, L12 thereafter. Info: Albacon III, c/o Vince Docherty, 20 Hillington Gardens, Glasgow G52 1PR, Scotland, U.K. (Use airmail outside the U.K.)

—Anthony Lewis

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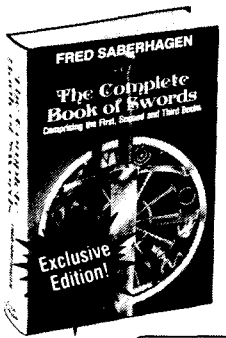

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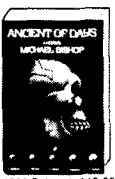

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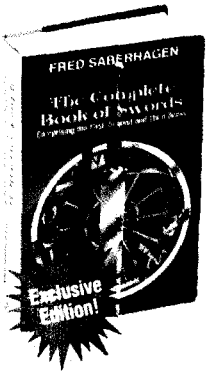

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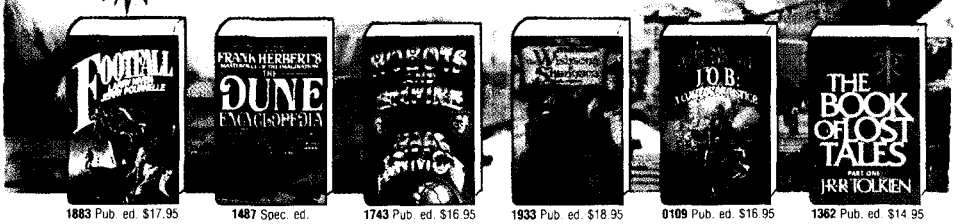

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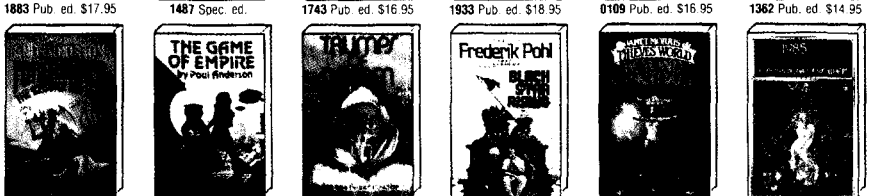

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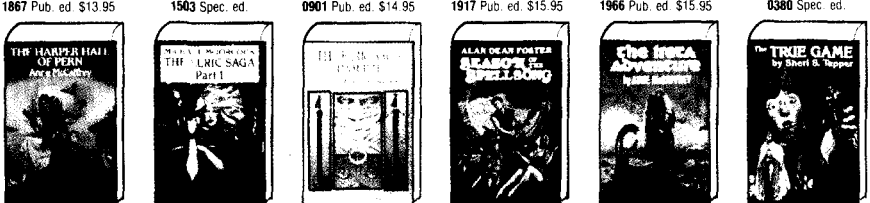

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